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Rhodora

JOURNAL OF THE

NEW ENGLAND BOTANICAL CLUB

Conducted and published for the Club, by

MERRITT LYNDON FERNALD, Editor-in-Chief

JAMES FRANKLIN COLLINS
CHARLES ALFRED WEATHERBY } Associate Editors
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NOTES ON THE FLORA OF THE STATE OF WASHINGTON—III

J. William Thompson

By continued exploration and study, I have been able to add some more interesting records for this State, as follows:

Poa interior Rydb. Dr. Hitchcock reports that Mr. Suksdorf found this species in Spokane Co., and to this record can be added mine from much farther west: "base of Three Brothers along Nigger Creek, Kittitas Co., 900 m., *Thompson* 10531."

Carex saximontana Mack. While hiking to Billy Goat Pass in Okanogan Co., I noticed a peculiar grass-like sedge by the trail beneath yellow pines. It agrees very well with the above, except the achenes are larger than given by Mr. Mackenzie. It is a new record for this State, being from "lower slopes of Billy Goat Mountain, 800 m., *Thompson* 10898."

Carex sychnocephala Carey. Mr. Chas. B. Fiker, Okanogan orchardist, still finds time to steal away from fruit raising long enough to turn up interesting things from that interesting and little-known region. In his collection of 1933 was a Carex, one so strikingly different from anything I had previously seen that I at first thought it must be undescribed. But rather than run the risk of merely making another useless synonym, I was willing to consult someone who was in a much better position than I to compare it with known species of its group. I appealed to Dr. Svenson, and he reported the specimen to be typical *Carex sychnocephala* Carey. This constitutes a remarkable extension in range for the species, being found "on shore of Little Goose Lake southeast of Omak, 26 July 1933, *Fiker* 1295 and 1304."

Salix brachycarpa Nutt. Two years ago, while descending from a high ridge in the Mount Stuart region, I hastily collected a slender willow by a spring above Beverly Creek. Dr. Ball tentatively called it *Salix brachycarpa* Nutt. This past season, while botanizing along

Bowlder Creek, twenty-five miles west of the Mount Stuart location, I again found the willow, this time in great abundance by the banks of the mountain stream. I made a large collection of both staminate and pistillate plants, and when submitted to Dr. Ball, he pronounced them typical *S. brachycarpa*, and our records for the species are: "by spring on steep slope, head of Beverly Creek, Kittitas Co., 1200 m., 17 August 1932, *Thompson* 8885; margin of mountain stream, along Bowlder Creek, Kittitas Co., 1000 m. 18 June 1934, *Thompson* 10697 and 10698." Both stations are near the altitudinal limit for *Pinus ponderosa*.

Arabis lyrata L. var. kamchatica Fisch. in DC. Syst. ii: 231 (1821). Dr. Hultén[1] states that our northwestern material which has been referred to var. *occidentalis* S. Wats.[2] is identical with the above variety. While on Mount Baker last summer, I found this rather rare crucifer in great abundance at about 1800 meters, just below perpetual snow. Mr. Suksdorf's collection cited by Piper[2] must have grown from a chance seed that had been washed down from the higher altitudes where I found it. In spite of the dense fog and the twelve long weary miles back to the town of Glacier all alone, I took time to pick up several very interesting species in just a few minutes: *Poa alpina* L., *Saxifraga Lyallii* Engl., *Epilobium latifolium* L., *Smelowskia ovalis* M. E. Jones, and *Senecio Elmeri* Piper, and also an *Arabis* sp. with flat erect pods, as yet undetermined. Exact station for the crucifer was "Heliotrope Ridge, Mount Baker, Whatcom Co., 1800 m., *Thompson* 11239."

Lepidium campestre (L.) R. Br. A large patch of apparently this species was found by an artificial pond made by irrigation overflow, five miles east of Cle Elum, Kittitas Co., 9 May 1934, *Thompson* 10413.

Teesdalia nudicaulis (L.) R. Br.; Ait. f., Hort. Kew. ed. 2, iv: 85 (1812). Last spring while botanizing in those peculiar prairies just south of Tacoma, I found a peculiar *Lepidium*-like crucifer, the identity of which puzzled everyone who examined it. Several weeks ago I happened to read Dr. Blake's[3] account of having found a crucifer which was not in any of our manuals. The description given by him seemed to fit my plant, and I started on a search through European floras for a description and perhaps a cut. I found an excellent figure in Lindman's *Bilder ur Nordens Flora*, plate 208. The plate matched my collection exactly. A few days after this, I received a letter from Mr. John Thomas Howell of the California Academy of Sciences, and he also had hit upon the identification of my crucifer, but in an entirely different manner. Then to make it all the more interesting, I received another collection from Mr. I. C. Otis, who had found it in another county. Those prairies were thoroughly botanized by Prof. J. B. Flett years ago and if it was there then, it is not likely that his keen

[1] Hultén. Flora of Kamtchatka ii: 165 (1928).
[2] Piper. Contr. U. S. Nat. Herb. xi: 292 (1906).
[3] Rhodora xxxvi: 413 (1934).

eyes would have overlooked it. We can conclude then that the species has been recently introduced, but how and when is unknown. Now to Dr. Blake's eastern records can be added ours as follows: "gravelly prairies near Roy, Pierce Co., 6 April 1934, *Thompson* 10101; south of Tumwater (near Olympia), Thurston Co., *I. C. Otis* 1845.

Draba aureola S. Wats. Late in the season of 1933, three of us climbed up the slopes of Mount Rainier to the foot of Flett Glacier, where we found this rare *Draba* growing in great abundance in the barren moraines where it seemed impossible for a plant of any kind to grow. Associated with it were *Smelowskia ovalis* M. E. Jones, *Cardamine bellidifolia* L., and *Polemonium elegans* Greene. Nearly every *Draba* was freely branched, and this surprised us not a bit since Dr. Henderson[1] states that "specimens from Mount Rainier . . . are unbranched," and concludes that the branched specimens he has from the North Sister of Oregon are entitled to varietal rank as var. *paniculata*. This kind of reasoning makes one wish that there could be more real research done before rushing into print with a new species or variety. I am sure that this species will be found to be branched from even its type locality, provided it is collected late enough in the season! The branched form "growing in the moraines of Flett Glacier, Mount Rainier, 1800 m., 27 August 1933, *Thompson* 10001" was widely distributed.

Delphinium viridescens Leiberg. This species has eluded me every year until last summer when I found it abundant in Camas Land, and in a bog on Tip Top peak nearby. It prefers to grow in decidedly moist situations somewhat in the open. The large collection I made has been widely distributed as from "bog on Tip Top, 1000 m., Chelan Co., 26 June 1934, *Thompson* 10793."

Saxifraga adscendens L. Prof. Flett found this many years ago in the mining region of Mount Baker; it is cited by Piper, but omitted entirely from the very incomplete "Flora of Mount Baker," by St. John and Hardin.[2] Last summer while botanizing on Skyline Ridge, a northern extension of Mount Baker, my assistant found several plants growing among *Romanzoffia sitchensis*, and they could easily have been mistaken for immature plants of the latter, until the flower was carefully examined. For the sake of permanent record, the collection was distributed as from "partially shaded cliff on Skyline Ridge, Mount Baker, 1500 m., *Thompson* 10980." One tiny plant was later found in Marmot Pass, Olympic Mts., about 1600 m., by my same assistant, Mr. Howard S. McGee.

Penstemon **Nelsonae** Keck & Thompson, sp. nov., herba perennis 5–9 dm. alta usque ad basim inflorescentiae glaberrima; rhizomatibus prostratis moderati lignescentibus; caulibus paucis erectis virgatis; foliis integris vel obscure obsoleteque denticulatis crassiusculis paullo glaucis, basilibus lanceolatis ad basim apicemque acuminatis 5.5–13

[1] Rhodora xxxiii: 204 (1931).
[2] Flora of Mount Baker, in Mazama xi: 52–102 (1929).

cm. longis 9–17 mm. latis, petiolis gracilibus laminis fere aequalibus, caulinis sessilibus lanceolatis vel ovato-lanceolatis basi amplexicaulibus ad 12 cm. longis ad 40 mm. latis gradatim reductis quam internodiis brevioribus; thyrso virgato spiciformi interrupto glandulari-pubescenti, pedunculis cymularum (8–10 geminis) brevibus appressis; calyce 5.5–7.5 mm. longo, lobis lineari-lanceolatis attenuatis integris herbaceis vel anguste scarioso-marginatis; corolla flava 17–21 mm. longa exteriore glandulari-puberula, tubo superne sensim modice ampliata, fauce 5 mm. crassa, limbo breviter bilabiato patenti, labio inferiore intus pilis albis barbatis; staminibus fertilibus inclusis glaberrimis, loculis antherarum usque ad apicem dehiscentibus 1.0 mm. longis ovato-oblongis, filamento sterili apice superne dense flavo-barbato; capsula 5–6 mm. longa, ovoidea; seminibus numerosis acutangulis, testa sulphurea-marginata.

Type: Burned over land at base of Mt. Angeles, Olympic Range, Clallam County, Washington, at 550 m. (1800 feet) altitude, June 9, 1934, *J. William Thompson* 10617 (Dudley Herbarium of Stanford University; isotypes in Carnegie Institution, and in private herbarium of J. William Thompson). The only other known collection of this species is from Mrs. Oscar Nelson's garden, within a few hundred feet of the exact type station, *Thompson* 9474 (Thompson, C. I.). This may be known as the cotype, as the plant was brought into the garden from the type locality.

It is a pleasure indeed to name this handsome species in honor of Mrs. Oscar Nelson, in whose delightful wild flower garden it was that Mr. Thompson first saw the plant in full bloom. On inquiring from where it came, he was very much surprised when Mrs. Nelson pointed to the burn just back of her house. Mt. Angeles has been visited by scores of botanists, nearly all of whom have seen Mrs. Nelson's wonderful rockery of native plants, and how the species has escaped notice all this time is a mystery. Later search was rewarded by finding three plants still persisting among the second growth fir and bracken. The plant grows in a region that has been swept over by successive forest fires, and probably represents the remnant of a once abundant species. It makes a showy garden plant, and it should be introduced into cultivation. However, seed from the garden specimen failed to germinate for Mr. Thompson.

Penstemon Nelsonae belongs in the section *Graciles* Pennell. Our material would indicate it to be composed of the largest individuals in the section, the other species seldom attaining the height of 5 dm. The stout stems of *P. Nelsonae* may attain a thickness of 8 mm. Morphologically, the nearest known relative of *P. Nelsonae* appears to be *P. attenuatus* Dougl., a species of eastern Washington and adjacent Idaho. The two are similar in having glabrous herbage except for the

glandular-pubescent inflorescences, in glandular-puberulent corollas with bearded lower lip, in yellow-bearded staminodes and in general shape and size of flowers. *Penstemon Nelsonae* is of larger stature throughout than *P. attenuatus*. It is further removed from this and the other species of the *P. confertus-procerus* complex by the denticulations of the leaves. Our new species is well isolated from the other species of the section *Graciles* excepting the small-flowered *P. procerus* Dougl. (the form *P. Tolmiei* Hook.), and it is the only yellow-flowered *Penstemon* occurring west of the Cascades in Washington.

Aster meritus A. Nels. (*A. bakerensis* St. John). Dr. Muenscher[1] has already reviewed the "Flora of Mount Baker," and expressed his surprise to find so many species common to the region that were omitted by the authors. On one short visit there, I found thirty-three species not in the Flora, and strangely enough, I found most of them near their base camp, Mount Baker Lodge. Since its publication, I have made several visits there, and paid especial attention to the forms and species which were described as new. Specialists to whom I have submitted this material have reduced the new species one by one until only *Aster bakerensis* remained. I made a long, hard trip to Grouse Butte last summer, and found the *Aster* growing in the crevices of the cliffs at about 1000 m., on Grouse Butte, and the specimens were much larger than indicated in the original description. Now Dr. Blake declares this species to be typical *Aster meritus* A. Nels. Dr. St. John in the original description states: "This new species does not appear to have any close relatives in North America," and this positive statement of a well known botanist caused me to doubt Dr. Blake at first. I sent material to Dr. Aven Nelson to compare with the type, and his ready agreement with Dr. Blake removes all doubts. But it is an interesting extension in range. My collection "Grouse Butte, Mt. Baker region, 1000 m. 10 August 1934, *Thompson* 11225," has been widely distributed.

Cleveland High School, Seattle.

Viola rotundifolia on Long Island.—In the fall of 1931 an unusually broad-leaved violet was found on the terminal moraine north of Queens Village. Fruiting material obtained the following spring (*Svenson* no. 4746) showed conclusively that the species was *Viola rotundifolia*, which is mentioned from a "single station on L. I." by Taylor, Fl. Vic. N. Y. 453 (1915). This is perhaps based on the citation, "Long Island City, Hon. A. Brown" in Jelliffe, Fl. Long Island 117 (1899), but Mr. Wilson could not locate any specimen in the herbarium of the New York Botanical Garden. The area has

[1] Torreya, xxxi: 15 (1931).

been improved for park purposes, and at the last visit (1932) the number of plants was sadly depleted. When first noted the plants were abundant over an area approximately fifty feet in diameter in woodland consisting of *Cornus florida* and oaks.—H. K. Svenson, Brooklyn Botanic Garden.

Collinsia parviflora in New England.—On June 8, 1935, Mr. S. K. Harris, my wife and I made an afternoon's visit to a group of abrupt and conspicuous slate hills in the town of Pawlet, Vermont. They rise to an altitude of about 2,000 feet; one of them, locally known as Haystack, has a considerable cliff on its western face. This we especially explored. The summit offered nothing more exciting than *Deschampsia flexuosa, Pyrus melanocarpa, Potentilla tridentata, Vaccinium pensylvanicum* and *Rhododendron roseum.* The lesser rock-outcrops and wooded slopes below, however, produced a soil sufficiently rich to support such at least mildly calcicolous species as *Cystopteris bulbifera, Arenaria stricta, Ranunculus allegheniensis, Arabis hirsuta, Draba arabisans* and *Waldsteinia.* At the base of the cliff, on shaded talus, we found a small patch, scarcely three feet square, of an unfamiliar little annual, which Professor Fernald later identified as *Collinsia parviflora* Dougl.

This species has a wide range in the western United States; east of the Rocky Mountains, however, it is known, so far as I am aware, only from the region of the Black Hills in South Dakota and from the Keweenaw Peninsula in Michigan and locally at Belleville, Ontario. The woods on Haystack have been thoroughly lumbered in the past: old cartpaths run here and there all through them. Some one has built a brush fence up to the very foot of the cliff; and catnip and *Barbarea vulgaris* are among the associates of *Collinsia* on the talus. It may conceivably have been introduced with western feed and somehow found a congenial, though precarious, abiding place under the Haystack cliff. On the other hand, "wooded hillsides" are among the rather varied natural habitats assigned to it by collectors in the West and, as above noted, there are no records of this "montane and submontane" species as a weed in the East. Possibly its occurrence at Pawlet may be considered an outlying native station, comparable (though much farther from its nearest neighbor) to that of *Carex Richardsonii* on Mt. Equinox, not far away.[1]—C. A. Weatherby, Gray Herbarium.

[1] See Fernald, Rhodora xxxiv. 229 (1932).

MIDSUMMER VASCULAR PLANTS OF SOUTHEASTERN VIRGINIA

M. L. Fernald

(*Continued from page 413*)

Salix sericea Marsh. Wet peaty clearings in woods of *Pinus serotina*, south of Grassfield, no. 3887.

It is most surprising to find this essentially northern and continental species growing in typical wet pine barren, with characteristic austral plants such as the *Myrica* next noted. *S. sericea*, as previously represented in the Gray Herbarium from Virginia, has come from the piedmont and mountains only.

Myrica Curtissi Chevalier, var. media (Michx.) Cheval. Mon. Myric. 186 [270] (1901). Wet peaty clearings in woods of *Pinus serotina*, south of Grassfield, no. 3890 (small-leaved form).

This is the first record of any form of *Myrica Curtissi* from north of South Carolina; but several specimens from southern New Jersey belong to var. *media*. We have three species of Wax Myrtle or Candle Berry north of Florida. *M. cerifera* L. (including true *M. caroliniensis* Mill., not recent authors) is either a shrub or tree with the coriaceous and evergreen narrowly oblanceolate leaves varying from entire to sharply serrate, and with the smallest fruit of our three species. *M. Curtissi* Cheval. is also evergreen, with coriaceous lustrous foliage oblong to narrowly obovate. The typical form of the species has glabrous foliage and branches, but var. *media* has the expanding leaves strongly pubescent, the mature leaves more or less velutinous and the dark (blackish) bark of the branches permanently somewhat pubescent. Its fruits are described as slightly larger than in *M. cerifera*. The third species is the deciduous-leaved shrub or small tree of the Atlantic slope: leaves oblong to narrowly obovate, submembranaceous, opaque; bark of mature branches whitish-gray and glabrous; fruits 3.5–4.5 mm. in diameter. This shrub, extending north to southern Newfoundland and the Magdalen Islands, is erroneously passing as *M. caroliniensis* Mill. Miller clearly described the variation of *M. cerifera* with most serrate leaves and cited for it a characteristic plate of Catesby. The wrong interpretation of *M. caroliniensis* is clearly discussed by Chevalier, who correctly takes up for the deciduous-leaved and northern species the name *M. pensilvanica* Loiseleur. Loiseleur gave a beautiful characterization of the northern Bayberry and an excellent plate. The name *M. pensilvanica* had formerly crept into horticultural lists but its first clear definition seems to have been that of Loiseleur.

Typical glabrous Myrica Curtissi was extended northward into Virginia in May, 1935: pine woods near Benefit, *Fernald & Griscom*, no. 4380.

Carpinus caroliniana Walt. Common in swampy woods or occasionally in dry woods: Blackwater River, no. 3894; west of Pungo, *F. & G.*, no. 4382.

Carpinus caroliniana (plate 394) in the swamps and wet woods of southeastern Virginia looked strange to our northern eyes. Its slender trunks were covered with ashy-gray bark, instead of the steel-blue or blue-gray cortex which in the North gives the tree the name "Blue Beech." The leaves, too, looked unfamiliar, small and oblong, with very short teeth, suggesting, very superficially, those of *Amelanchier oblongifolia*. Study in the herbarium shows, indeed, that all the material from the southern coastal plain, from Florida to eastern Texas, thence north into southernmost Illinois and to eastern Virginia, the leaves of the fruiting branches are oblong to narrowly oblong-ovate, 1–3.5 (very rarely –4) cm. broad, 2.5–8 cm. long, acute (but not subcaudate) at tip, with comparatively low serration (figs. 6–10), the small teeth rarely 1 mm. long. The bracts (figs. 2–5) of the fruiting ament are obtuse or subacute, the few teeth blunt or at least not sharp-pointed. The calyx-lobes (figs. 2–5) at summit of the fruit are usually well developed, sometimes quite conspicuous (especially fig. 2).

The tree of the North (plate 395), from Nova Scotia to Ontario and Minnesota, south through the northern states and in the uplands to North Carolina and Arkansas, has bluer bark; it also has larger and more oval leaves with a caudate-acuminate tip, with sharper and longer teeth (figs. 5–7), mostly sharper-toothed bracts (figs. 2–4) and usually very reduced calyx-lobes. That the small-leaved extreme of the southern Coastal Plain is what Walter must have had when he gave his brief diagnosis of *Carpinus caroliniana* in his Flora Caroliniana, written at Santee, South Carolina, there is scarcely a doubt. It, therefore, becomes necessary to find the proper name for the wider-ranging northern and inland tree. It is reasonably certain that it must be *Carpinus Betulus virginiana* Marshall, Arb. Amer. 25 (1785), for Marshall must have had the northern variety; and his characterization of the "oval, pointed leaves, sawed on the edges" is sufficiently definite. Since there is variation in all the characters I feel that the two trees are geographic varieties rather than distinct species. I, therefore, propose to call the larger-leaved variety

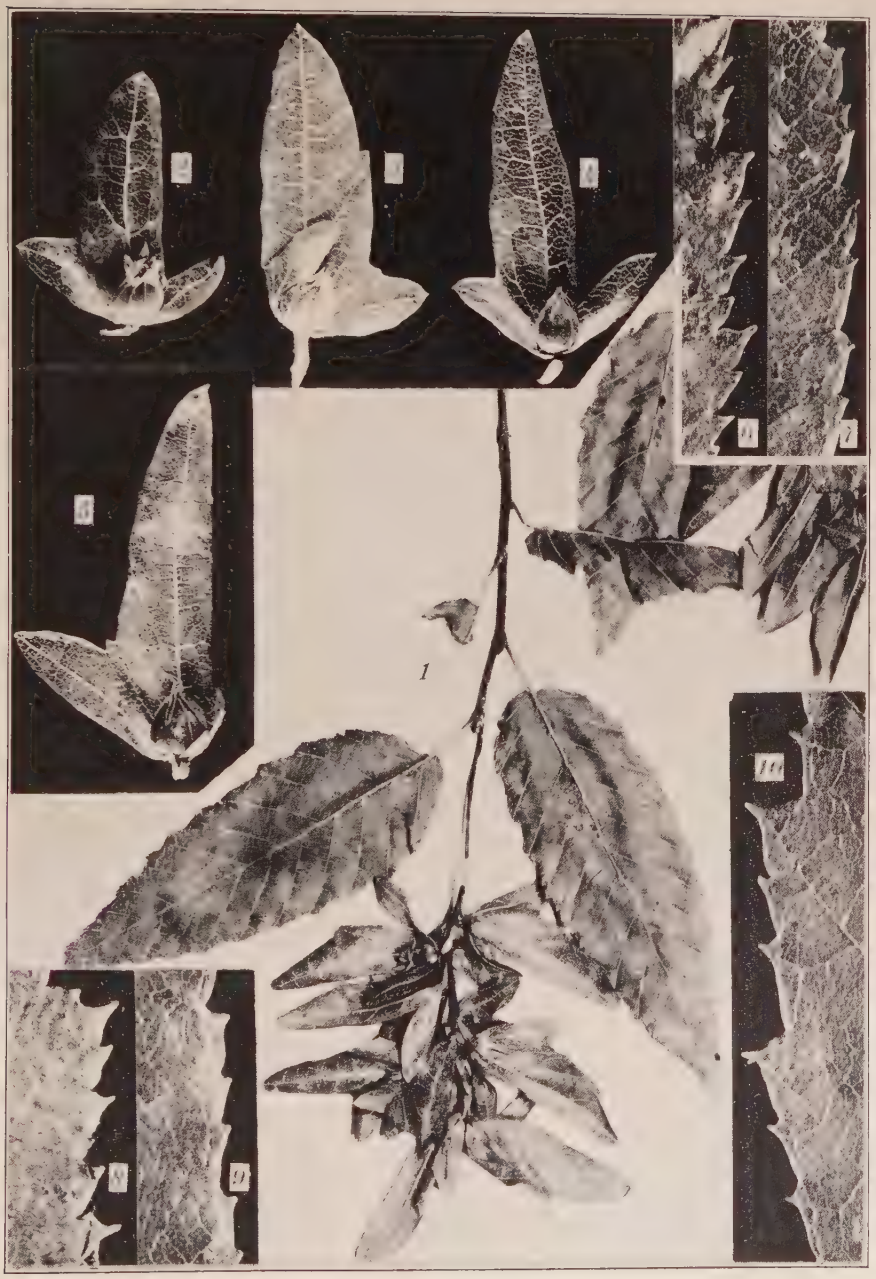


Photo. E. C. Ogden.

CARPINUS CAROLINIANA: FIG. 1, fruiting branch, × 1; FIGS. 2–5, bracts and fruits, × 2; FIGS. 6–10, margins of leaves. × 5.

Photo. E. C. Ogden.

CARPINUS CAROLINIANA, var. VIRGINIANA: FIG. 1, fruiting branch, × 1; FIGS. 2–4, bracts and fruits, × 2; FIGS. 5–7, margins of leaves. × 5.

Carpinus caroliniana Walt., var. **virginiana** (Marsh.), comb. nov. *C. Betulus virginiana* Marsh. Arb. Amer. 25 (1785). Bark blue-gray; leaves of fruiting branches oval or narrowly ovate, rounded or cordate at base, abruptly subcaudate at tip, 5–12 cm. long, 2.5–6 cm. broad, with sharp and slender teeth, the larger teeth 1–3 mm. long; bracts usually with 1–5 sharp teeth; calyx-lobes at summit of fruit short.—Nova Scotia to Ontario and Minnesota, south to uplands of North Carolina and Arkansas. Plate 395.

Betula nigra L. Local, mostly sprout-growth, perhaps of more general occurrence than appears: wet peaty clearings in woods of *Pinus serotina*, south of Grassfield, no. 3895; sandy pine woods, Sand Bridge, *F. G. & L.*, no. 4629.

Celtis occidentalis L., var. **submembranacea**, var. nov., foliis anguste ovatis apice longe attenuatis maturis submembranaceis utrinque viridibus.—Southeastern Virginia to eastern Georgia. The following are referred here. Virginia: sandy woods, northern end of Knott's Island, Princess Anne Co., August 1, 1934, *Fernald & Long*, no. 3910 (type in Gray Herb.); rich woods, Cedar Island in Back Bay, June 20, 1935, *Fernald, Griscom & Long*, nos. 4630, 4631 (trunks up to 6 dm. or 2 feet in diameter). North Carolina: large trees seen, but no specimens taken, Knott's Island. South Carolina: locality not stated, *M. A. Curtis*. Georgia: bank of Chattahoochee River, Cobb Co., July 9, 1900, *R. M. Harper*, no. 166.

Var. *submembranacea* is at once characterized by having the mature leaves submembranaceous and deep-green on both sides, the other varieties of *Celtis occidentalis* having them firmer and thicker and paler beneath or on both sides. Although Sargent, Bot. Gaz. lxvii. 218 (1919) placed Harper's no. 166 with var. *canina* (Raf.) Sargent, l. c. 217, it has the thin and deep-green foliage of var. *submembranacea*, the mature leaves shriveling or wrinkling in drying.

Aristolochia Serpentaria L. Dry, mixed woods, Little Neck, no. 3913.

Polygonum glaucum Nutt. Sand at upper border of salt marsh, Wachapreague, no. 3919.

P. prolificum (Small) Robinson. Upper border of salt marsh, Wachapreague, no. 3918.

P. opelousanum Riddell. Frequent in sloughs and pond-margins: Pungo, *F. & G.*, no. 2816.

P. setaceum Baldw. Frequent in swampy woods: Blackwater River, no. 3916; Little Neck, no. 3917.

Chenopodium leptophyllum Nutt. Back of the sand dunes, Cape Henry, no. 3924.

Apparently the first coastal record from south of New Jersey.

Acnida cannabina L. Brackish or saline marshes, frequent: North Landing River, *F. & G.*, no. 2820.

Sesuvium maritimum (Walt.) BSP. Very scarce, damp sand and clay back of the ponds, Dam Neck, no. 3925, only one plant seen.

The first material in the Gray Herbarium from between Delaware and North Carolina.

Arenaria lanuginosa (Michx.) Rohrb. Sprawling and leaning on other vegetation, in dry, mixed woods, and supported on *Smilax* tangle to a height of 1.3 m., Little Neck, nos. 3927, 3928; similar habitat, Great Neck, *F. G. & L.*, no. 4637.

The first records from north of North Carolina.

Aquilegia canadensis L. Rich woods and banks, local, the plants very tall: Little Neck, no. 3930; Great Neck, *F. & G.*, no. 4404.

Caltha palustris L. Very local: along brook in swampy woods, Little Neck, no. 3931.

Anemone virginiana L. Dry mixed woods, Little Neck, no. 3934.

Ranunculus hederaceus L. Wet sand bordering swampy woods and thickets along Back Bay, False Cape, no. 3937; also *F. G. & L.*, no. 4642, growing with strictly indigenous species and seemingly native itself.

Asimina triloba (L.) Dunal. Scattered in rich or swampy woods, the leaves rather smaller than in most inland material, tending to be narrower and more cuneate, thus approaching the foliage of the more southern *A. parviflora* (Michx.) Dunal: Oceana, no. 3940; Great Neck, *F. & G.*, no. 4406.

Decumaria barbata L. Scattered generally through the region, climbing high on trees in rich woods and swamps: London Bridge, no. 3951; Munden, no. 3950; Great Neck, *F. G. & L.*, no. 4648.

Spiraea tomentosa L., var. rosea (Raf.) Fern. Rhodora, xiv. 190 (1912). Local: wet, peaty clearing in woods of *Pinus serotina*, south of Grassland, no. 3955.

Already known from southeastern Virginia, but perhaps isolated there. The material in the Gray Herbarium is otherwise from well inland, from Ontario and Manitoba southward to interior northern Georgia, Tennessee, Arkansas and Kansas. Typical *S. tomentosa*, of acid soils, is not represented in the Gray Herbarium from the coastal plain south of New Jersey. The plant of Grassland is quite like the inland extreme.

Amelanchier oblongifolia (T. & G.) Roem. Common in wet woods, thickets and clearings: Grassfield, no. 3958; North Landing, no. 4426.

A. canadensis (L.) Medic. Rich woods, frequent: Little Neck, no. 3956.

Crataegus Youngii Sarg. The most frequent species seen; scattered in wet woods, swamps and clearings: Grassfield, no. 3960; North Landing, *F. & G.*, no. 4427; Cedar Hill, no. 4428; Virginia Beach, *F. G. & L.*, no. 4651; Cedar Island, no. 4652.

Slight extension north, from North Carolina.

C. Crus-Galli L. Occasional near the coast of Princess Anne Co.: Knott's Island, no. 3961.

Geum virginianum L. (*G. flavum* Bickn.) Frequent in rich woods: Little Neck, no. 3963.

G. canadense Jacq., var. Grimesii Fern. & Weath. Occasional in thickets and borders of woods: Blackwater River, no. 3964; Cedar Island, *F. G. & L.*, no. 4653.

Agrimonia rostellata Wallr. Occasional in rich woods: Little Neck, no. 3966; Little Creek, no. 3969; Virginia Beach, *F. & G.*, no. 2822.

A. mollis (T. & G.) Britton. Rich woods, Little Neck, no. 3967.

A. parviflora Ait. Border of thicket, south of Grassfield, no. 3968.

Albizzia julibrissin Durazzini. Abundantly naturalized in thickets and at borders of woods: Munden, no. 2971.

Tephrosia spicata (Walt.) T. & G. Apparently local: thickets on roadside bank, Creed's, no. 3973.

Lespedeza Stuevei Nutt. Dry woods: Cape Henry, *F. & G.*, no. 2837.

L. intermedia (Wats.) Britt. Dry border of woods, Pungo Causeway, *F. & G.*, no. 3839.

L. repens (L.) Bart. Dry woods, frequent: Virginia Beach, no. 2840.

Desmodium nudiflorum (L.) DC. Rich woods, locally abundant: Little Neck, no. 3988; Virginia Beach, *F. & G.*, no. 2828.

D. Dillenii Darl. Dry pine woods, Cape Henry, *F. & G.*, no. 2826.

D. paniculatum (L.) DC. Rich woods back of Virginia Beach, *F. & G.*, no. 2832.

D. laevigatum (Nutt.) DC. Dry pine woods, Macon's Corner, Princess Anne Co., *F. & G.*, no. 2829.

D. obtusum (Muhl.) DC. Mixed woods, Virginia Beach, *F. & G.*, no. 2833.

D. strictum DC. Dry pine woods, Cape Henry, *F. & G.*, no. 2825.

D. marilandicum (L.) DC. Mixed woods, Virginia Beach, *F. & G.*, no. 2827.

Stylosanthes biflora (L.) BSP. Dry open woods and thickets: Lynnhaven, no. 3975; Macon's Corner, *F. & G.*, no. 2835.

S. riparia Kearney. Apparently local: border of dry woods, Little Neck, no. 3976.

Clitoria mariana L. Dry open clay land, Virginia Beach, nos. 3982, 3984.

Some Geographic Varieties of Linum (Plate 396).—*Linum medium*, as currently treated, consists of two strongly defined geographic varieties, differing in several fairly constant, though somewhat confluent characters, as follows.

Leaves elliptic, oval or elliptic-obovate, obtuse or subacute, opaque, without obvious veins shown by transmitted light,

only the uppermost subulate-tipped, 25–40 below the inflorescence: sepals about equaling to shorter than the capsule; the longer 2–3 mm. long; the inner ovate, entire or but sparingly glandular-ciliate: false septa strongly developed, the capsules promptly splitting into 10 valves. . . . *L. medium*, var. *typicum*.

Leaves linear or linear-lanceolate to lance-elliptic, subtranslucent, with evident veins shown by transmitted light, all but the lowermost with prolonged subulate tips, 30–150 below the inflorescence: sepals mostly exceeding the capsule; the longer 2.5–5 mm. long; the inner ovate to lanceolate, usually copiously glandular-ciliolate: false septa less regularly developed, the capsules often splitting into only 5 carpels or tardily or incompletely into 10 valves. . . . . Var. *texanum*.

L. MEDIUM (Planchon) Britton, var. **typicum**. *L. virginianum*, var. β. *medium* Planchon, Lond. Journ. Bot. vii. 480 (1848). *L. medium* (Planch.) Britton in Britt. & Brown, Ill. Fl. ii. 349 (1897), as to name-bringing synonym, not as to description and figure. *Cathartolinum medium* (Planch.) Small. N. Am. Fl. xxv[1]. 72 (1907), as to name-bringing synonym, not as to description.—Southern Ontario (York Co. to Bruce Co.), northwestern Pennsylvania and northern Ohio. FIGS. 1–5.

Var. **texanum** (Planch.), comb. nov. *L. virginianum*, var. δ ? *texanum* Planch. l. c. 481 (1848). *L. virginianum*, γ. *angustifolium* Engelm. in Gray, Pl. Wright. 26 (1852). *L. medium* Britt., l. c. in part (description and fig. 2261). *Cathartolinum medium* Small, l. c. in part (description).—Florida to Texas, north to southwestern Maine, northeastern Massachusetts, southern Vermont, eastern Pennsylvania, West Virginia, southern Michigan, northern Indiana, Illinois, Missouri and Oklahoma. FIGS. 6–10.

Linum medium was first recognized by Planchon who treated it, var. *texanum* and *L. floridanum* as varieties of *L. virginianum* L. He correctly understood the latter species, his *L. virginianum*, var. α *microcarpum* being based on the type of *L. virginianum* in the Linnean herbarium. The fruit of the inclusive *L. virginianum* was defined by Planchon with almost complete false septa such as occur in typical *L. virginianum* and in typical *L. medium* ("capsulae parvae depresso-globosae semiseptis fere completis"), while his material of var. *texanum* was immature and Planchon thought that it, as well as *L. floridanum*, might prove to be a distinct species. Planchon's account of the two varieties of *L. virginianum*, here specially significant, was as follows:

Var. β. *medium*,—humilius, ramulis fructiferis strictis erecto-patentibus, calyce capsulam (praecedenti [var. *microcarpum* or typical *L. virginianum*] paulo majorem) paulo superante; fenestra loculorum linearis-angustissima. . . .

Var. δ (?) *Texanum*,—habitu var. α. [*i. e.* elatius, ramulis fructiferis divaricato-patentibus], sed floribus majoribus, laciniis calycinis valde inaequalibus, majore pedicellum brevem et capsulam (non plene maturam) obtusam fere duplo superante. An sp. distincta?

Hab. . . . Var. β, Canada, lacus Huron, *Dr. Todd* in Hb. Hook.; Kentucky, *Dr. Short*, ibid.; alibi verosimiliter in Prov. confederatis.— . . . Var. δ, in ditione Texana, prope S. Felipe, *Drummond*, no. 38. coll. tertiae.

I have not seen the Todd material, which should stand as the type of *Linum medium*, but all other material from southern Ontario, where Todd collected, well matches Planchon's specifications: low, fruiting branches strict, suberect; calyx little exceeding the capsule; and very narrow fenestration of the valves of the fruit. The Ontario plant with these characters comes from shores of Lakes Huron, Ontario and Erie. It ranges from 1.3–4.5 dm. high and has the characters enumerated in the key above.

FIG. 1 shows a characteristic specimen, × ¾ from the Bruce Peninsula, Lake Huron, with enlarged details of the characteristic leaf, calyx, capsule and valves. It is probable that the Kentucky material seen by Planchon was not strictly identical with it.

Linum medium, var. *texanum*, usually taller, with more divergent fruiting branches and with the calyx twice as long as the (young) capsule, was based (as *L. virginianum*, var. *texanum*) on *Drummond*, no. 38 from Texas. An excellent sheet of no. 38, with capsules evidently more mature than in the material seen by Planchon, is in the Gray Herbarium. A small plant from Virginia, closely matching it, is reproduced, × ¾, as FIG. 6; and details of leaf, calyx, fruit and valves from it are added. Var. *texanum* may be as low as the average var. *typicum* and its inflorescence may then have short branches. On the whole, however, it is taller, ranging from 1.5–7.5 dm. high, with very many more and narrower, sharp-pointed leaves and elongate branches. As to the septation of the fruit, the 5 carpels in the northern type promptly separate into 10 valves, as Planchon implied and as they usually do in *L. virginianum;* but in the southern variety the carpels are often undivided, though septation occasionally occurs. In this character they show parallelism with the usually non-septate carpels of the southern *L. floridanum* (Planch.) Trel. and their very prompt septation in the more northern and inland *L. intercursum* Bickn. The artist who drew *Linum* for Britton & Brown's Illustrated Flora caught the point: *L. virginianum* (fig. 2260) and *L. striatum* (fig. 2263) showing, correctly, the carpels promptly septate, resulting in 10 valves; *L. floridanum* (fig. 2262) and *L. medium* (var. *texanum*), fig. 2261 (the latter with "leaves . . . lanceolate to linear-lanceolate, acute" and with sepals shown as exceeding the capsule) both correctly illustrated with non-septate valves. But, whereas var.

texanum has carpels and their separated valves barely different from those of typical *L. medium*, *L. intercursum* and *L. floridanum* have marked differences in leaf, fruit and valves, which indicate that they are distinct species; the former of the northern coastal plain, from Massachusetts to Virginia, thence inland and south to western Georgia and northern Alabama; the latter restricted to the southern coastal plain, north to southern Illinois and eastern North Carolina. Figs. 11–14 show the details of *L. floridanum*, a plant with very numerous (50–150) leaves, the middle and upper (fig. 11) linear, opaque (fig. 12) to transmitted light, and with a slender subulate tip 0.5–1 mm. long; capsule (fig. 13) globose-ovoid and rounded at summit; and individual carpels and valves (fig. 14) blunt or with short incurved tips. *L. intercursum*, on the other hand, has fewer (15–60) leaves, these (fig. 15) blunter, showing evident venation (fig. 16) by transmitted light; the capsules (figs. 17 and 18) ovoid and pointed; the individual carpels (fig. 19) with erect, acuminate beaks.

Linum striatum is separated in our keys by special emphasis on the opposite leaves—"leaves below the branches mostly all opposite" (*Britton & Brown*); "Stem-leaves chiefly opposite" (*Robinson & Fernald*). To the field-botanist who has known the species only on Cape Cod, the islands of southeastern Massachusetts or Block Island, off the coast of Rhode Island, such an emphasis might seem insufficient; he would say: leaves of the stem and of the primary axis of the inflorescence all or nearly all opposite. On the mainland of southern New England, however, more of the leaves are alternate; and southward, through Virginia, the Carolinas and Georgia and westward, many or most of the leaves are alternate. It thus becomes interesting to note Walter's original diagnosis of *L. striatum* of Carolina:

> *striatum* 2. *floribus terminalibus*, foliis subovatis alternis, caule ramosiori *striato* foliorum *nervo marginibusque decurrentibus*.

In general, all the southern material and most of that on the continent northeastward to northeastern Massachusetts and inland to the Great Lakes region has the 5–25 upper leaves of the stem and all or essentially all along the primary axis of the loosely branched inflorescence alternate, only the lower 5–10 (rarely –14) nodes having them opposite, thus sufficiently approximating Walter's diagnosis, "foliis . . . alternis." As already stated, the plant of Cape Cod, Martha's Vineyard, the Elizabeth Islands and Nantucket, Massachusetts and of Block Island, off the coast of Rhode Island, has most of the

leaves (all below the inflorescence and several pairs on the main axis) opposite. Consequently, the lower and often essentially all the branches of the inflorescence are opposite, producing an inflorescence strikingly unlike that of the continental and southern plant, in which they are alternate. The northern insular and peninsular extreme may be called

Linum striatum Walt., var. **multijugum**, var. nov., foliis caulinis oppositis, foliis ramibusque imis panicularum oppositis.—Massachusetts: peaty margin of Quanset Pond, Orleans, September 10, 1927, *Fernald*, no. 620 (type in Gray Herb.); moist sandy and peaty shore, second small pond east of Lizzie's Pond, Chatham, *Fernald & Long*, no. 18,663; open mossy bog, Harwich, August 5, 1913, *Weatherby* (slightly transitional); borders of peaty quagmires east of Buck Pond, Harwich, *Fernald & Long*, no. 17,018; near Pleasant Lake, Brewster, August 3, 1911, *E. W. Sinnott;* cranberry bogs near Walker Pond, Brewster, *Fernald*, no. 17,017; dry sandy upper beach of second pond [Seth's P.] north of No Bottom Pond, Brewster, *Fernald & Long*, no. 17,019; damp sandy and peaty beach of Blueberry Pond, Brewster, *Fernald*, in Pl. Exsicc. Gray. no. 371; peaty margin of Sheep Pond, Cuttyhunk, *Fogg*, no. 2528; border of Waquatuquait Pond, Nantucket, September 7, 1885, *Deane*. Rhode Island: various stations on Block Island, August 17, 1892, *J. F. Collins; Fernald & Long*, no. 9770, *Fernald, Hunnewell & Long*, no. 9771; *Fernald, Long & Torrey*, no. 9772; September 28, 1916, *Collins, Spalding & Gravatt;* August 10, 1919, *C. B. Graves*.

Linum virginianum, var. β. *oppositifolium* Engelm. in Gray, Pl. Wright. 26 (1852) was based on typical *L. striatum*, a plant with which Engelmann was otherwise unfamiliar. Exceptional individuals of *L. striatum* from the mainland of southern New England and from Long Island and New Jersey approach var. *multijugum*.

Oxalis filipes Small. Frequent in woods and thickets: Great Neck, *F. & G.*, no. 4443; Benefit, *F. & G.*, no. 4444; Knotts' Island, no. 3998.

Polygala incarnata L. Dry open clay lands and thickets, frequent in Princess Anne Co.; Virginia Beach, no. 4006.

P. mariana Mill. Common in dry or moist open soil: Virginia Beach, no. 4005; Little Neck, no. 4004; Blackwater River, no. 4003; Pungo Causeway, *F. & G.*, no. 2846.

P. verticillata L. Local: dry open clay lands and thickets, Virginia Beach, no. 4001.

Cnidoscolus stimulosus (Michx.) Engelm. & Gray. Sandhills, Cape Henry, no. 4007.

Croton glandulosus L., var. septentrionalis Muell. Arg. Dry sand barrens, Cape Henry, *F. & G.*, no. 2847.

Acalypha virginica L. Occasional, in open clay of thickets and fields: Blackwater River, no. 4009.

A. digyneia Raf. Local, in open clay at border of woods, east of Little Creek, no. 4008.

Phyllanthus caroliniensis Walt. Ditch in open clay at border of woods, east of Little Creek, no. 4011.

Ilex vomitoria Ait. Frequent in sandy woods and thickets: Knotts' Island, no. 4021; Creed's, *F. & G.*, no. 4450.

Ceanothus americanus L. Infrequent: dry, mixed woods, Little Neck, no. 4025.

Ampelopsis arborea (L.) Koehne. Local: thickets on sand dunes south of False Cape, no. 4026.

Ascyrum stans Michx. Frequent in borders of woods and clearings: Little Neck, no. 4040; Grassfield, no. 4041.

Hypericum punctatum Lam. Occasional: dry, mixed woods, Little Neck, no. 4038.

We did not see the following, which has been collected in Henry Co.

Hypericum punctatum Lam., var. **pseudomaculatum** (Bush), comb. nov. *H. pseudomaculatum* Bush in Britton, Man. 627 (1901); Britton in Britton & Brown, Ill. Fl. ed. 2, ii. 534, fig. 2894 (1913).

When first published by Dr. Britton, Bush's *Hypericum pseudomaculatum* was cited only from Missouri, and distinguished from *H. punctatum* only by slightly longer petals. In his second publication, however, he separated it also on its acute leaves and more attenuate sepals, and extended its range eastward to Florida and South Carolina. As to length of petal, it is perfectly simple to find in the herbarium sheets of specimens with the upper leaves subdeltoid and acute (*H. pseudomaculatum*) but with petals as small as in the smallest-flowered *H. punctatum*. In fact, the smallest-flowered extreme, *H. micranthum* Choisy, may have the uppermost leaves either rounded at summit, as in typical *H. punctatum*, or deltoid-ovate and acute, as in *H. pseudomaculatum*. Var. *pseudomaculatum*, which is a southern extreme distinguished primarily by having the uppermost and bracteal leaves acute, extends from Florida to Texas, northward to southern Virginia (Martinsville, Henry Co., *Heller*, no. 1095), western Tennessee, Illinois, Missouri and Oklahoma.

H. nudiflorum Michx. Local: shrubs 0.5–0.9 m. high, at border of gum swamp, Oceana, no. 4039.

Apparently the first record from north of North Carolina.

H. gymnanthum Engelm. & Gray. Frequent in damp sands or clays, Princess Anne Co.: Cape Henry, no. 4036; Virginia Beach, no. 4035; Rifle Range, no. 4037.

H. petiolatum Walt. Gum swamps: Oceana, no. 4032; North Landing, no. 4031.

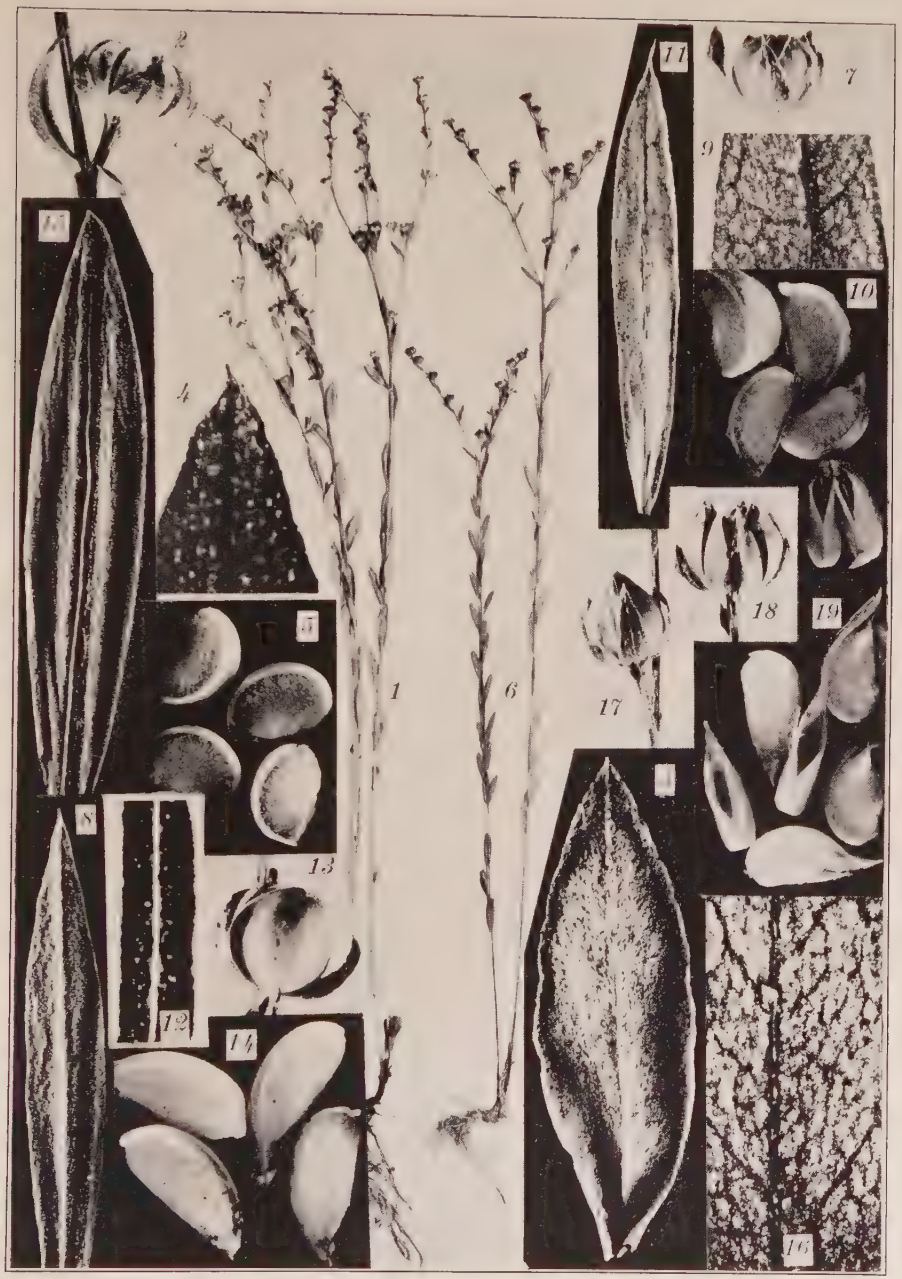


Photo. E. C. Ogden.

LINUM: plants, × ¾; leaves, × 5; details of leaf-venation, × 10; capsules, × 5; ripe carpels, × 8.

L. MEDIUM: FIG. 1, small plant; FIG. 2, capsule; FIG. 3, leaf; FIG. 4, portion of leaf (opaque), by transmitted light; FIG. 5, ripe carpels.

L. MEDIUM, var. TEXANUM: FIG. 6, small plant; FIG. 7, capsule; FIG. 8, leaf; FIG. 9, portion of leaf, by transmitted light; FIG. 10, ripe carpels.

L. FLORIDANUM: FIG. 11, leaf; FIG. 12, portion of leaf (opaque), by transmitted light; FIG. 13, capsule; FIG. 14, ripe carpels.

L. INTERCURSUM: FIG. 15, leaf; FIG. 16, portion of leaf, by transmitteed light; FIGS. 17 and 18, capsules; FIG. 19, ripe carpels.

Photo. E. C. Ogden.

NYSSA SYLVATICA, VAR. TYPICA: FIG. 1, fruiting branch, × 1; FIG. 2, smooth lower surface of leaf, × 10; FIG. 3, staminate inflorescence, × 3.

Lechea racemulosa Michx. Occasional: border of woods, east of Little Creek, no. 4049.

Viola affinis LeConte. Dry, mixed woods, Little Neck, no. 4056.

V. sororia Willd. Dry, mixed woods, Little Neck, no. 4055.

V. Brittoniana Pollard. Frequent in swales and damp open soil: Rifle Range, no. 4053, also *F. & G.*, no. 4469; Sand Bridge, *F. G. & L.*, no. 4676; Munden, *F. & G.*, no. 4468; North Landing, *F. & G.*, no. 4467; Blackwater River, no. 4054; Richard Swamp, *F. & G.*, no. 4466.

V. pectinata Bickn. Local: wood-road in pine woods, Dam Neck, no. 4051; damp peat, Rifle Range, *F. & G.*, no. 4463.

Apparently the first record from south of Maryland. Our collections are quite like Bicknell's original material.

Ludwigia glandulosa Walt. Large bushy-branched plants 1 m. high, in gum swamp south of North Landing, no. 4076.

Apparently the first station known north of South Carolina.

L. pilosa Walt. Wet, peaty clearings in woods of *Pinus serotina*, south of Grassfield, no. 4074, there growing with L. linearis Walt. (our no. 4075).

The first evidence, apparently, of *Ludwigia pilosa* from north of South Carolina.

L. brevipes (Long) E. H. Eames, Rhodora, xxxv. 228 (1933) (*Ludwigiantha brevipes* Long). Western Branch of James River, near Portsmouth, August, 1840, *F. Rugel* in Gray Herb.; shallow water, pond along railroad, 37th Street Station, Cape Henry [Virginia Beach], June 26, 1922, *Randolph & Randolph*, no. 331; shallow pools and wet sand of dune-hollows, south of False Cape, Princess Anne Co., no. 4070.

Our station, south of False Cape, is very extensive, within a short distance of the North Carolina line and on one of the outer sand-bar islands which extend to Cape Hatteras and beyond. The species will doubtless be found in North Carolina. The type station, on the New Jersey coast, is the only one known north of Virginia.

Hydrocotyle Canbyi C. & R. Frequent in Princess Anne Co.: silts near outlet of Rainey's Pond, Sand Bridge, no. 4090; damp sand and clay back of the ponds, Dam Neck, no. 4091.

H. ranunculoides L.f. Local: in and by a brook, inundated swale back of the dunes, False Cape, no. 4086.

Cicuta Curtisii C. & R. Gum swamps: Oceana, no. 4083.

Angelica villosa (Walt.) BSP. Border of dry, mixed woods, Little Neck, no. 4082.

Cornus stricta Lam. Swamps and margins of creeks: False Cape, no. 4100; Indian Creek, *F. G. & L.*, no. 4648.

The Varieties of Nyssa sylvatica (Plates 397–400).—In Princess Anne County we were very much perplexed by the genus

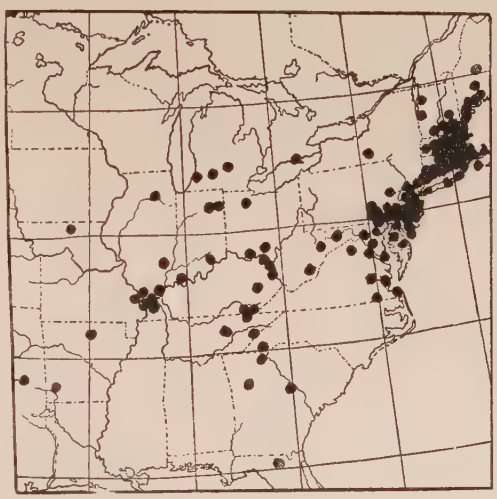
Nyssa. *N. aquatica* L., with its large solitary fruits, was perfectly clear, but the trees with small paired or triple fruits showed such diversity of foliage, two of the extremes often growing within a few miles of each other, that it has seemed important to settle, so far as possible, their identities. Very briefly, I find no very positive differences in flowers and fruits in the series including *N. sylvatica* Marsh. and *N. biflora* Walt. Another of the series, not recently recognized, is *N. caroliniana* Poiret, in which the foliage and fruits are somewhat larger than in the other two, but with so many transitions that I am forced to treat them as well marked varieties. From the description "with oval, or rather inverse egg-shaped leaves" and from the region whence it came (Pennsylvania) *N. sylvatica* Marsh. is clearly the northern extreme, with long fruiting peduncles, short staminate pedicels and elliptic to obovate, abruptly short-pointed and comparatively small leaves smooth beneath. *N. biflora* Walt., from the brief diagnosis "foliis oblongo-lanceolatis integerrimis, laevibus", is safely identified as the narrow-leaved tree with short peduncles already generally understood as *N. biflora*. *N. caroliniana* Poir., with leaves long-tapering to both ends and with long staminate pedicels, I take to be the tree of the series with longest leaves, conforming to the general outline shown in Poiret's illustration. A fourth extreme, somewhat similar to *N. caroliniana*, but with broadly oval to short-oblong leaves, is in some points about as near true *N. sylvatica* but usually with shorter fruiting peduncles and longer staminate pedicels; in other points suggestive of a broad-leaved *N. biflora*. This is distinctly a southern tree and I am unable to identify it with any described form. In order to show the four varieties of *N. sylvatica*, as I view them, it seems desirable that they be illustrated (PLATES 397–400). The maps of ranges are based on all the material at the Arnold Arboretum and the Gray Herbarium.

The following brief characterizations, with the illustrations, may make my treatment clear.

NYSSA SYLVATICA Marsh., var. **typica**. *N. sylvatica* Marsh. Arb. Amer. 97 (1785). *N. multiflora* Wang. Nordam. Holz. 46, t. 16, fig. 39 (1787). *N. multiflora*, var. *sylvatica* (Marsh.) Wats. Bibl. Index, 442 (1878).—Leaves adjacent to flowers and fruits (excluding those of vegetative sprouts and leading tips) obovate to elliptic, frequently with short abrupt tip, firm or subcoriaceous, lustrous above, smooth (rarely papillate) and glabrous or glabrate (except sometimes on nerves) beneath, 3–8(–10) cm. long, 2–6 cm. broad: fruiting peduncles (1.5–)3–6.5 cm. long: staminate pedicels 0.5–4 mm. long.—West-central Maine to northern Missouri, south to Virginia and Tennessee

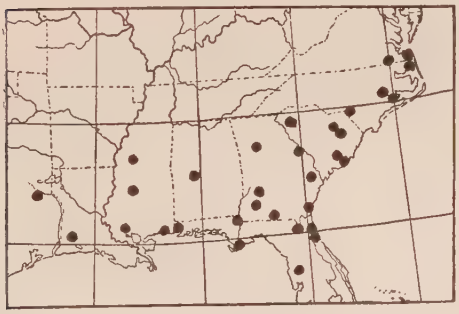
and more locally to northern Florida and northeastern Texas. PLATE 397; MAP 1.

Var. BIFLORA (Walt.) Sarg. Sylva, v. 76, t. ccxviii. (1893). *N. biflora* Walt. Fl. Car. 253 (1788).—Leaves coriaceous, those adjacent to flowers and fruits oblanceolate, narrowly obovate or narrowly oblong-lanceolate, round-tipped, obtuse or subacute, lustrous above, smooth or papillate beneath, 2.5–6(–9) cm. long, 1.5–3.5 cm. broad: fruiting peduncles 1–3.5 cm. long; staminate pedicels 3–5 mm. long.—Coastal plain, southeastern Maryland to Florida, thence to eastern Texas, inland, locally, into the piedmont. PLATE 398; MAP 2.[1]



MAP 1. Range of NYSSA SYLVATICA, var. TYPICA.

Although Sargent in his later work (Manual) and Small maintain *Nyssa biflora* as a species, said to have "Stone prominently ribbed" (*Sargent*) as opposed to "Stone indistinctly ridged" in *N. sylvatica*, I get little distinction; to me they are both furrowed but without any striking difference. When growing in "gum swamps," with abundant water, the bases of the trunks of var. *biflora* are enlarged or swollen, but when growing in damp sands, away from standing water, they do not show this basal enlargement. I am, therefore, in full accord with Sargent's earlier statement, in the Sylva: "This aquatic tree often appears distinct enough from the northern

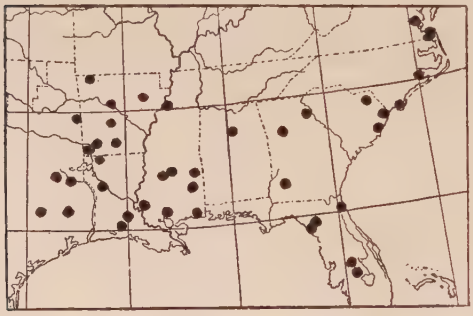


MAP 2. Range of NYSSA SYLVATICA, var. BIFLORA.

[1] The range of var. *biflora* should be indicated as extending northward to southeastern Maryland.

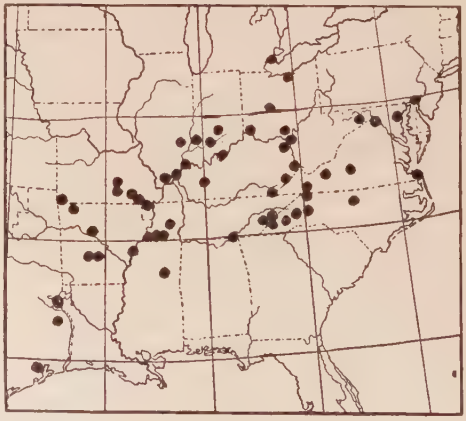
Tupelo, but the extreme forms are connected by others intermediate between the two in the shape and size of their leaves and in the shape and ridges of their stones." Var. *biflora* passes into

Var. **dilatata**, var. nov. (tab. 399), foliis maturis late ovalibus vel rotundato-oblongis vel late obovatis apice rotundatis subcoriaceis supra lucidis subtus planis vel papillatis pilosis vel glabris; fructi pedunculis 1.5–5 cm. longis; florum staminiorum pedicellis 3–8 mm. longis.—Coastal plain, rarely piedmont, southeastern Virginia to Florida, thence to eastern Texas, eastern Oklahoma and Arkansas. Type (plate 399): low ground, sandy oak-pine woods, 4 miles southwest of Hartwell, Hart Co., Georgia, August 19, 1927, *Wiegand & Manning*, no. 2339 (Gray Herb.). Map 3.



Map 3. Range of Nyssa sylvatica, var. dilatata.

Var. **caroliniana** (Poir.), comb. nov. *N. Caroliniana* Poir. in Lam. Encycl. iv. 507 (1796) and Ill. iii. 442, t. 851, fig. 1 (1823).—Leaves submembranaceous to thin-coriaceous; those adjacent to flowers and fruit rhombic-oval to rhombic-obovate, tapering subequally to the usually acuminate (rarely blunt) base and apex, papillose and frequently pilose beneath, (6–) 8–15 cm. long, 3.5–8 cm. broad: fruiting peduncles 1.5–5 cm. long; pedicels of staminate flowers 2–4.5 mm. long.—Chiefly in the uplands and the interior, Chester County, Pennsylvania to Essex Co., Ontario, thence to southeastern Virginia, interior North Carolina, Tennessee, northern Mississippi and eastern Texas. Plate 400; map 4.



Map 4. Range of Nyssa sylvatica, var. caroliniana.

Photo. E. C. Ogden.

NYSSA SYLVATICA, VAR. BIFLORA: FIG. 1, fruiting branch, × 1; FIG. 2, staminate inflorescence, × 3.

Photo. E. C. Ogden

NYSSA SYLVATICA, VAR. DILATATA: FIG. 1, fruiting branch (TYPE), × 1; FIG. 2, staminate inflorescence × 3.

The dominance of var. *caroliniana* in the Appalachian and Ozark Uplands, whence it spreads locally into the lower levels, is striking. It there reaches higher altitudes than typical *Nyssa sylvatica*, some collections (for example, from Walker Mountain, Smyth Co., Virginia, *Small*) recorded as from 3000 feet, others from "summits" of mountains. Within four miles of the Atlantic, on the outer coastal plain, we found var. *caroliniana* (Oceana, Princess Anne Co., no. 4097) associated with other inland types (*Asimina triloba*, *Morus rubra*, *Ulmus americana*, *Carex virescens*, etc.) and only a short distance from colonies of *Thelypteris hexagonoptera*, *Liparis liliifolia*, *Liriodendron Tulipifera*, *Oxydendrum arboreum* and other Alleghenian types. Within an equally short distance were the coastal plain *N. sylvatica*, var. *biflora* and hundreds of other southern coastal plain types.

I am placing the Alleghenian tree with *Nyssa caroliniana* Poir. on account of Poiret's figure, which seems to represent this variety. His description called for "feuilles . . . ovales, . . . aiguës à leurs deux extremités, . . . glabres des deux côtés . . . Cet arbre crôit naturellement dans la Virginie & la Caroline." At the same time Poiret published *N. canadensis:* "Cette espèce a beaucoup de rapports avec le précédente, peut-être même n'en est-elle qu'une variété, quoique d'un pays différent. C'est le même port, la meme disposition dans les feuilles & les fleurs; cependant les feuilles, au lieu d'etre glabres, sont fortement velues en-dessous sur leurs principales nervures, & ciliées à leur circonference . . . Cette plante a été envoyée du Canada au citoyen Lamarck." Without seeing Poiret's type it is not possible to say whether he had var. *caroliniana* or var. *typica*, both of which extend into southernmost Canada.

Vaccinium macrocarpon Ait. Swampy or inundated woods, north of Blackwater River, Princess Anne Co., no. 4123.

It was certainly surprising to find the cranberry on the coastal plain within 10 miles of North Carolina. The species has been known southward to the mountains of North Carolina and Kearney found it at Virginia Beach; but at our station in Princess Anne Co. it was growing beneath *Cladium jamiacensis* and *Smilax laurifolia* and associated with many other southern, rather than northern types.

Lysimachia quadrifolia L. Occasional in woods: Virginia Beach, no. 4125.

Polypremum procumbens L. Occasional in damp sand or clay: Cape Henry, no. 4130; North Landing, *F. & G.*, no. 2875.

Sabatia brachiata Ell. Local: dry, mixed woods, Little Neck, no. 4134.

An extension north from North Carolina.

S. ANGULARIS (L.) Pursh. Frequent in woods, thickets and clearings, very showy in late July and early August: Virginia Beach, no. 4132.

S. GRACILIS (Michx.) Salisb. Swales back of the dunes, Rifle Range, south of Rudy Inlet, no. 4133.

As pointed out in RHODORA, xxxiv, 27, *Sabatia gracilis* is a southern species, heretofore known north to eastern North Carolina. It is quite distinct from the inland and northern *S. campanulata* (L.) Torr., with which it has been confused.

BARTONIA VIRGINICA (L.) BSP. Apparently local: damp sandy and peaty depressions back of the dunes, Rifle Range, no. 4136.

GENTIANA PARVIFOLIA (Chapm.) Britton. Local: with the last, no. 4135.

ASCLEPIAS TUBEROSA L. Common, very conspicuous in June, in clearings and open areas: Creed's, no. 4139. Forma FLAVESCENS Farwell. Local: Blackwater River, no. 4140.

ASCLEPIAS LANCEOLATA Walt., var. **paupercula** (Michx.), comb. nov. *A. paupercula* Michx. Fl. Bor.-Am. i. 108 (1803).

Assuming that Walter's *Asclepias lanceolata* is the plant with the median leaves LANCEOLATE (Walter's types are so fragmentary that the lower and middle portions of large plants are rarely preserved), the plant of Princess Anne and Norfolk Counties is chiefly var. *paupercula*, which has all the leaves very narrowly elongate-linear ("foliis longissime linearibus"—*Michx.*). We collected the lanceolate-leaved *A. lanceolata* in the brackish marsh of Back Bay, east of Morse Point in Currituck Co., North Carolina (no. 4142). Typical *A. lanceolata* extends north to New Jersey and south to Florida. Most specimens before me do not specify the habitat. One from Miami, Florida (*Garber*) is from "Everglades," one from near Elizabeth City, North Carolina (*Biltmore Herb.*, no. 1415c) is said to be from "Wet pine barrens;" Wiegand & Manning's no. 2596 is from "River swamp" west of Leechville, North Carolina, which is on the estuary of Pungo River; our collection (see above) is from border of salt marsh; and Stone thus summarized the situation in New Jersey: "Though said in the books to be a plant of 'wet pine barrens' it is, so far as New Jersey is concerned, strictly confined to the edge of the salt marshes, where they join the upland" (Stone, Pl. So. N. J. 650 (1911)). May not the difference in habitat be largely associated with the breadth of leaf?

Our three collections of var. *paupercula* are all from acid peat: swales back of the dunes, Rifle Range, south of Rudy Inlet, Princess Anne Co., no. 4141; wet peaty clearings in woods of *Pinus serotina*,

south of Grassfield, Norfolk Co., no. 4143; boggy swale by Northwest River, Northwest, *F. G. & L.*, no. 4691 (transitional). There is an old specimen of it in the Gray Herbarium from Norfolk (*J. D. Dana*). As represented in the Gray Herbarium, var. *paupercula* reaches its northern limit in southeastern Virginia; we have it from South Carolina and Georgia ("moist pine-barrens," Sumter Co., *Harper*, no. 1041), with many sheets from Florida, thence to southeastern Texas. Only a few specimens from Florida show indication of habitat and those from Mississippi, Louisiana and Texas give no such data. The Florida specimens which give clues to habitat are from Lake Co., near the geographic center of the state; from "swaley woods," Waldo (in the interior); "around ponds," Myers; "pond-margin," Chipley; "cypress swamp," Fort Myers; "swampy pine barrens," near Jacksonville. It is reasonably clear, then, that typical *A. lanceolata* prefers brackish to saline habitats, var. *paupercula* those which are acid.

A. VERTICILLATA L. Local: dry, mixed woods, Little Neck, no. 4144.

DICHONDRA REPENS Forst., var. CAROLINIENSIS (Michx.) Choisy. Frequent in grasslands: open clay at border of woods, east of Little Neck, no. 4146.

CONVOLVULUS SEPIUM L., var. **Catesbeianus** (Pursh), comb. nov. *Calystegia Catesbeiana* Pursh, Fl. Am. Sept. ii. 729 (1814). VIRGINIA: thickets and woods, Dam Neck, Princess Anne Co., no. 4147.

Var. *Catesbeianus* is the coastal variety (Cape Cod to Florida) with narrowly oblong to lanceolate, long-acuminate, sagittate leaves. It may be pubescent or glabrate and sometimes quite glabrous. Its very narrow and long-acuminate leaves at once distinguish it from var. *pubescens* (Gray) Fern. and from var. *americanus* Sims (the common American plant with glabrous stems and leaves and roseate flowers).

CUSCUTA POLYGONORUM Engelm. On *Cassia*, border of pines, near Princess Anne Courthouse, *F. & G.*, no. 2879.

C. CORYLI Englem. On various herbs, damp woods, Virginia Beach, no. 4149.

HELIOTROPIUM CURASSAVICUM L. Brackish places: Wachapreague, no. 4151; Kempsville, *F. & G.*, no. 2880.

LIPPIA NODIFLORA (L.) Michx. Brackish to fresh sands and ditches by Back Bay, northern end of Knott's Island, no. 4154.

SCUTELLARIA OVALIFOLIA Pers. Dry, mixed woods, seen several times: Little Neck, Princess Anne Co., no. 4160.

Primarily a species (*S. pilosa* Michx., not Hill) of the richer interior, on Little Neck, Great Neck and neighboring areas of rich woodland forming one of an assemblage of isolated piedmont species.

Pycnanthemum incanum Michx., var. **Loomisii** (Nutt.), comb. nov. *P. Loomisii* Nutt. in Journ. Acad. Sci. Nat. Philad. vii. 100 (1834). Virginia: Emporia, Greenville Co., *Tidestrom*, no. 6887; border of wet woods near Great Bridge, Norfolk Co., no. 4162.

Var. *Loomisii* is the southern extreme of *Pycnanthemum incanum* with the pubescence of branches and bracts reduced to a mere white-pruinose or white-puberulent coat, whereas typical *P. incanum* has the branches and, more or less, the bracts short-villous or pilose. Var. *Loomisii* has the pubescence of *P. albescens* Torr. & Gray and closely resembles that species but its calyx-lobes are sharp and setose, those of *P. albescens* blunt and without setae. Var. *Loomisii* is in the Gray Herbarium from New Jersey, Delaware, Virginia, North and South Carolina, Georgia and Alabama.

Physalis pubescens L. Infrequent in dry, sandy woods: Knott's Island, no. 4167; Sand Bridge, no. 4168.

Tentatively placed here; the entire group needs intelligent checking with the types.

Petunia parviflora Juss. Brackish sand, upper border of salt marsh, Wachapreague, Accomac Co., no. 4169.

Apparently indigenous, possibly adventive; an extension northward of the natural range, from Florida.

Mimulus alatus Ait. Occasional in swampy woods: Munden, no. 4186.

Limosella subulata Ives. Wet sand of dune-hollows, south of False Cape, Princess Anne Co., no. 4180.

Apparently the first recorded station south of New Jersey, southeastern Pennsylvania and the head of Chesapeake Bay in Maryland. The station is so close to the North Carolina line that search will doubtless extend the species into the "southern flora."

Bacopa Monnieria (L.) Wettst., var. **cuneifolia** (Michx.), comb. nov. (plate 401, figs. 1–4 and 7). *Moniera cuneifolia* Michx. Fl. Bor.-Am. ii. 22 (1803). Virginia: damp sand and clay back of the ponds, Dam Neck, Princess Anne Co., no. 4183; wet sand of dune-hollows, south of False Cape, Princess Anne Co., no. 4184 (prostrate and repent); inundated swales back of the dunes, south of False Cape, no. 4185 (erect or sub-erect, up to 3 dm. high).

Typical *Bacopa Monnieria*[1] of pantropical range is smaller (figs. 5

[1] I am spelling the specific name *Monnieria*, not *monnieri*, since the evidence indicates that the latter spelling, though originally used by Linnaeus, was a typographic or orthographic error. As a specific name it started in one of the Linnean Dissertations as LYSIMACHIA (*monnieri*), Cent. II. Pl. 9 (1756). These dissertations were edited, slightly revised and reprinted in Amoenitates Academicae. Centuria II, Plantarum was no. lxiii in Amoen. Acad. iv. pp. 297–332, and there the plant under discussion appeared as GRATIOLA (*monnieria*), with some alterations in the

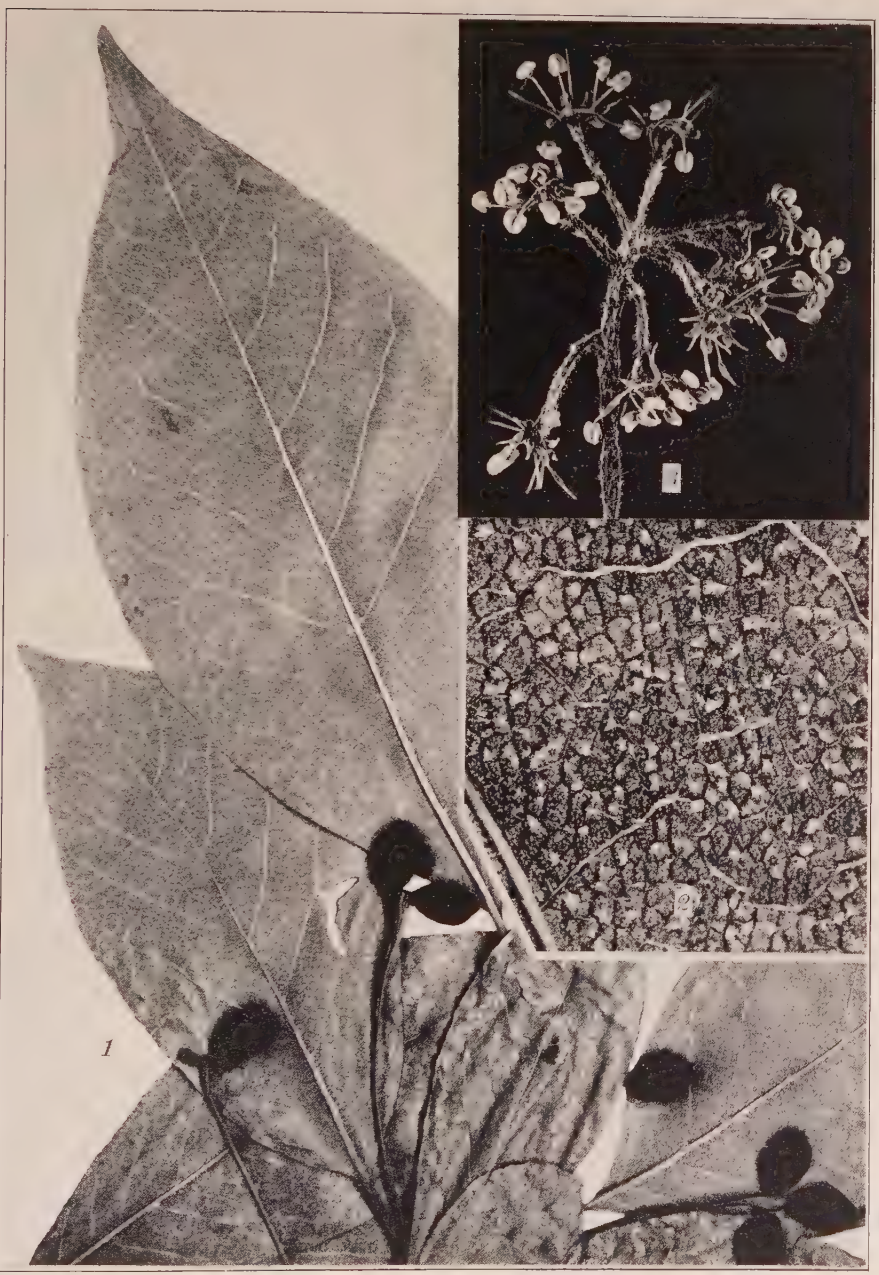


Photo. E. C. Ogden

NYSSA SYLVATICA, var. CAROLINIANA: FIG. 1, fruiting branch, × 1; FIG. 2, papillate lower surface of leaf, × 10; FIG. 3, staminate inflorescence, × 3.

Photo. E. C. Ogden.

BACOPA MONNIERIA, var. CUNEIFOLIA: FIGS. 1 and 2, summits of erect plants, × 1; FIGS. 3 and 4, flowers, × 3; FIG. 7, terminal leaves, × 3.
B. MONNIERIA: FIG. 5, plant, × 1; FIG. 6, fruit.

and 6), forming close carpets, the larger sepals lanceolate to lanceovate and 1.5–2.5 mm. wide. Var. *cuneifolia*, originally from South Carolina, is typical on the coast from Georgia to southeastern Virginia, also Bermuda, and locally in the West Indies, extending thence west to Texas; it also occurs in Hawaii. It is the coarsest extreme of the species, the larger sepals ovate and 3–5 mm. broad.

It seems to me wiser to retain *Bacopa* Aublet (a *nomen conservandum*) for *Moniera* P. Br. or *Herpestis* Gaertn. f. in the inclusive sense of Bentham, Gray, Wettstein, Chodat, Edwall, Standley and others, rather than to follow Pennell in recognizing the sections and subsections as "genera." *Bacopa Monnieria* belongs to Bentham's (and Gray's) *Herpestis* § *Bramia*, to Wettstein's *Bacopa* § *Bramia*. Treated by Pennell[1] as a genus, with the floral characters already well known to Bentham, Gray and Wettstein and evaluated by them as sectional only, *Bramia* is further defined by Pennell with minor vegetative characters which are certainly not generically diagnostic: "Extensively repent" (clearly not in FIGS. 1 and 2); "Stem glabrous" (surely not a character of profound phylogenetic importance); "leaves spatulate-oblong, with one evident longitudinal nerve" (but deep in the tissue of the fleshy—halophytic—leaf there may be additional nerves), "Sepals acute or acutish, much exceeding the acute capsule" as opposed to "Sepals obtuse, scarcely longer than the rounded capsule" in *Ranapalus* or *Bacopa rotundifolia* (Michx.) Wettst. *Bacopa Monnieria* var. *cuneifolia*, included by Pennell under *Bramia* with "Sepals acute or acutish" may have them decidedly obtuse, as in FIGS. 3 and 4. *Bramia* and *Ranapalus* come in Pennell's treatment under a division including "Leaves . . . very entire," as opposed to "Leaves . . . crenate." If *entire* is an adjective which may have varying

citations. Subsequently, in Species Plantarum, ed. 2, i. 24 (1762), it appeared as *G. Monnieria*, and this spelling and capitalization were maintained by Linnaeus in Species Plantarum, ed. 3 (1764) and in his Systema Naturae, ed. 13, ii. 61 (1770). The same spelling (*Monnieria*) was maintained by Murray, Willdenow and other editors of the Linnean works. In Syst. Nat. ed. 10, ii. 851 (1758–59) it appeared as *G. Monnieri. A.*; and this spelling reappeared in ed. 11 (1760); it seems to to have been omitted from ed. 12, but in ed. 13, as already noted, it was *G. Monnieria*. Richter, in his monumental Codex Botanicus Linnaeanus, maintained *G. Monnieria* and specially designated the spelling *Monnieri* as a typographical error ("Gr. Monnieri, *ex err. typ.*"). It should be clear that, although bungling the name (which had been a generic name of Patrick Browne), Linnaeus, in his more mature and careful work (Syst. ed. 10 being in many ways carelessly edited) settled upon *Monnieria* as the preferred spelling; and since his later editors and commentators also adopted this spelling and looked upon *monnieri* and *Monnieri* as typographic errors, it is better so to consider them. I am indebted to Dr. Barnhart for his kindness in sending me transcripts from the original Dissertation, Cent. II. Plantarum.

[1] Pennell, *Scrophulariaceae of the Southeastern United States*, Contrib. N. Y. Bot. Gard. no. 221, Proc. Acad. Nat. Sci. Phila. lxxi. 228, 229 (1920).

degrees, "very" entire is an unfortunate description of leaves which may often be like those shown in FIG. 7 (from *Harper*, no. 1826, specially designated in the Gray Herbarium by Pennell as *Bramia*).[1]

BACOPA ACUMINATA (Walt.) Robinson. Occasional in depressions and damp sands: Rosemont, no. 4181; Rifle Range, no. 4182.

GRATIOLA PILOSA Michx. Frequent in depressions, damp sands and swales: Rosemont, no. 4173; Rifle Range, nos. 4174, 4175; False Cape, no. 4172.

UTRICULARIA GEMINISCAPA Benj. Shallow pools in pinelands, Cape Henry, no. 4187.

U. SUBULATA L. Damp sands and peats, Princess Anne Co.: Cape Henry, no. 4188, also *F. & G.*, no. 4502.

PHRYMA LEPTOSTACHYA L., var. **confertifolia**, var. nov. (TAB. 402, FIG. 1), internodiis plerumque abbreviatis 0.4–1.5 cm. longis valde cinereo-pilosis; foliis subgriseis subtus puberulis apice vix prolongatis dentibus marginalibus simplicibus crenatis brevibus.—VIRGINIA: dry, mixed woods, Little Neck, Princess Anne Co., August 8 and 9, 1924, *Fernald & Long*, no. 4197 (TYPE in Gray Herb.); rich, deciduous woods, east of Little Creek, Princess Anne Co., July 31, 1934, no. 4196.

Typical *Phryma Leptostachya* has the internodes elongate, the pairs of leaves standing distinctly apart, the stems less pubescent, the leaves (FIG. 2) bright-green and only sparingly pubescent, their tips sharply acuminate or prolonged, and their usually double marginal teeth much prolonged. Var. *confertifolia*, on account of the shortening of the internodes, gives the appearance of having the bluntish or

[1] Restoring the material of *Bacopa* in the Gray Herbarium to that genus, I find it necessary to make the following combinations:

BACOPA ACUMINATA (Walt.) Rob., var. **microphylla** (Raf.), comb. nov. *Ambulia rigida* Raf., var. *microphylla* Raf. Aut. Bot. 43 (1840). *Mecardonia acuminata brevifolia* Pennell, Proc. Acad. Nat. Sci. Phila. lxxi. 237 (1920). *M. acuminata microphylla* (Raf.) Pennell, Torreya, xxii. 79 (1922).

B. ACUMINATA (Walt.) Rob., var. **peninsularis** (Pennell), comb. nov. *Mecardonia acuminata peninsularis* Pennell, Proc. Acad. Nat. Sci. Phila. lxxi. 237 (1920).

In 1930 Pennell marked the material in the Gray Herbarium *Mecardonia acuminata peninsularis;* in 1931 he assigned it to the genus *Pagesia*, but he left typical *Bacopa acuminata* and var. *microphylla* in the genus *Mecardonia*.

B. PROCUMBENS (Mill.) Greenm., var. **peduncularis** (Benth.), comb. nov. *Herpestis peduncularis* Benth. in Hook. Comp. Bot. Mag. ii. 56 (1836). *H. chamaedryoides*, var. *peduncularis* (Benth.) Gray, Syn. Fl. N. Am. ii[1]. 280 (1878). *Mecardonia peduncularis* (Benth.) Small, Fl. Se. U. S. 1065, 1338 (1903).

B. PROCUMBENS (Mill.) Greenm., var. **tenuis** (Small), comb. nov. *Mecardonia tenuis* Small, Fl. Se. U. S. 1065, 1338 (1903).

Although Pennell maintained this as a species he characterized *Mecardonia tenuis* as "so close to *M. procumbens* and to *M. peduncularis* (Benth.) Small of Texas that the actual relationship of these species should be more fully investigated in the field" (Proc. Acad. Nat. Sci. Phila. lxxi. 238 (1920)). Asa Gray better understood it (Syn. Fl.) when he said of it under *Herpestis procumbens*, var. *peduncularis:* "A similar form, but with diffuse or procumbent stems (*H. peduncularis*, Chapm. Fl. 291), is from Key West, Florida."

merely acute gray-green leaves subverticillate. No typical *P. Leptostachya* was seen on the coastal plain of Virginia.

Galium obtusum Big., var. **filifolium** (Wiegand), comb. nov. *G. tinctorium filifolium* Wiegand in Bull. Torr. Bot. Cl. xxiv. 397 (1897). *G. filifolium* (Wiegand) Small, Man. 1208 (1933).—Frequent in damp woods about Virginia Beach, no. 4202, also *F. G. & L.*, no. 4704.

In his very helpful study[1] of *Galium trifidum and its North American Allies*, Wiegand clearly differentiated several plants which had previously been confused under *G. trifidum;* but, although he said of *G. trifidum*, as well as of some of the other names involved, "It is necessary first of all to determine just what plant this name represents," he contented himself with a discussion of the interpretations of various post-Linnean authors, without recording any effort to see exactly what Linnaeus had before him. In the cases of *G. trifidum* L. Sp. Pl. 105 (1753) and *G. tinctorium* L. l. c. 106 (1753) the types are perfectly clear; both were collected by Kalm, the first in "Canada," the second in "North America." Happily, Wiegand's deduction regarding the identity of *G. trifidum* was correct; a beautiful photograph of the Kalm sheet (the type) sent me from the Linnean Herbarium by Mr. S. Savage is a most characteristic specimen of the plant, with long arcuate peduncles, now properly passing as *G. trifidum.*

In the other case, however, that of *Galium tinctorium,* I am unable to follow Wiegand's reasoning when he writes of it, "From the description given by Linnaeus one can scarcely tell which plant is meant," for to me the Linnean diagnosis of Kalm's specimen (from Eastern America, probably Crown Point, New York, at the foot of Lake Champlain) is definite: "foliis linearibus: caulinis senis; ramorum quaternis, caule flaccido, pedunculis subbifloris, fructibus glabris." In spite of the clear statement by Linnaeus that the linear cauline leaves were in 6's, those of the branches in 4's, and the stems flaccid, Wiegand applied the name *G. tinctorium* to *G. obtusum* Bigelow and defined it as "rather stiff, . . . branches . . . strict, . . . stem glabrous or nearly so; leaves commonly in 4's, . . . corolla white, large (2–3½ mm. diam.), 4-parted"; while he called the small-flowered and weaker plant with primary leaves in 6's *G. Claytoni* Michx., well characterized by Wiegand: "stem slender . . . [with] diffuse branches . . . ; leaves . . . commonly in 5's or 6's, . . . flowers in clusters of 2's or 3's, . . . corolla minute, white, 3-parted."

[1] Wiegand, Bull. Torr. Bot. Cl. xxiv. 389–403 (1897).

As a synonym of his *Galium Claytoni* Wiegand cited "*G. tinctorium* Bigelow, Fl. Bost. ed. 2, 54. 1824." Having learned to have a keen respect for the precision of Jacob Bigelow, who with John Torrey early shared distinction as an accurate American phytographer, I have turned to Bigelow's accounts. After giving a clear English version of the Linnean diagnosis of *G. tinctorium* Bigelow added his own:

> A weak, branching plant, rough with reflexed prickles. Leaves linear-lanceolate, obtuse, whorled, the larger ones in sixes, smaller ones in fours. Peduncles very small, supporting minute white flowers.

Bigelow's account was so like the Linnean diagnosis of *Galium tinctorium* that it is not easy to see why his plant should be treated as identical with *G. Claytoni* Michx., if the Kalm plant (type of *G. tinctorium*) is not also *G. Claytoni*. That Bigelow clearly understood the two species, subsequently again differentiated by Wiegand, is evident. His *Galium obtusum* was thus defined:

> *G. caule laevi, procumbente; foliis quaternis, oblanceolatis, obtusis, margine nervoque asprellis; fructu laevi.*
>
> Stem smooth, procumbent; leaves in fours, oblanceolate, obtuse, rough on the edge and midrib; fruit smooth.
>
> Stem slender, diffuse, much branched, quadrangular, entirely smooth. Leaves universally in fours, linear-lanceolate, very obtuse, a little rough at the midrib and margin. Peduncles slender, three flowered. Petals acute, white. Fruit globular, smooth.—On the banks of Muddy brook, Roxbury.—July.—Perennial.

Further indicating his correct understanding of the two species, Bigelow added the comparative note: "It is a larger and more open plant than G. tinctorium." Every one who knows the type-region of *G. obtusum* and the abundant specimens from there in the local herbaria will agree with Wiegand that the plant which, in 1897, he called *G. tinctorium* is unquestionably *G. obtusum* Bigel.

Since American botanists have been following Wiegand in treating the partly 6-leaved flaccid *G. tinctorium* of Linnaeus as a stiffer plant with "leaves commonly in 4's," it seemed important to settle the exact identity of Kalm's material which is the type of *G. tinctorium*. Fortunately, the sheet in the Linnean Herbarium is well preserved (obviously not much studied in the past!) and a portion of the photograph of it, which Mr. Savage sends, is here reproduced, life-size, as PLATE 403, FIG. 1. Beside it, for comparison, is a portion of a plant (FIG. 2) farther advanced but still with some ascending flowers (the specimen from Conquest, New York, *Wiegand*, no. 7172) of the plant which Wiegand has removed from his own *G. tinctorium* and called *G. Claytoni*. Further to clarify the situation, FIG. 3 is a flowering frag-

Photo. E. C. Ogden.

PHRYMA LEPTOSTACHYA, var. CONFERTIFOLIA: FIG. 1, plant (TYPE), × 1.
P. LEPTOSTACHYA: FIG. 2, characteristic leaf, × 1.

Photo. E. C. Ogden.

GALIUM TINCTORIUM: FIG. 1, portion of TYPE in Linnean Herbarium, × 1, from photograph supplied by Mr. S. SAVAGE; FIG. 2, flowering branch, × 1, of *G. Claytoni*.
G. OBTUSUM: FIG. 3, flowering branch, × 1.

ment, × 1, of the 4-leaved plant which Wiegand thought was meant as *G. tinctorium* by Linnaeus, the plant which had been properly separated from true *G. tinctorium* by Bigelow as *G. obtusum*.

That *G. tinctorium* L. is the small-flowered plant with leaves often in 6's, as originally described, seems perfectly clear; and that it is also *G. Claytoni* Michx. is sufficiently demonstrated by a fragment of Michaux's type long ago presented to Asa Gray and now preserved in the Gray Herbarium.

I have suggested that the type of *Galium tinctorium* came from Crown Point on Lake Champlain. Linnaeus had his material from Pehr Kalm who, on July 8, 1749, wrote of it from "Fort St. Frederic, welches von den Engländern Crownpoint genannt wird":

> *Vom achten.* Das *zum Färben dienliche Meyerkraut** wurde in dem ganzen Canada von den Franzosen *Tisavojaune rouge* genannt, und wuchs hier in Menge in den Wäldern, und liebte eine gute Gartenerde, die fast etwas feuchte war. Mit den Wurzeln hiervon gaben die Wilden den Stacheln der Amerikanischen Igeln [quills of the American porcupine], welche sie in verschiedene Arbeiten einflechten, die rothe Farbe; und wird dieselbe schwerlich von der Sonne, dem Wasser oder der Luft verandert. Die Französischen Frauensleute in Canada sollen auch ihre Kleider mit diesen Wurzeln, welche klein, als bey dem gelben *Meyerkraute* (*Galium luteum*) sind, roth färben.—Kalm, Reise, iii. 303, 304 (1764).
>
> *Galium (tinctorium) foliis linearibus, caulinis senis . . . *Linn. Sp. pl.* 106.

If any further evidence were needed as to what Kalm (and after him Linnaeus) meant it could be found in Kalm's statement that his *Galium tinctorium* grew in all of Canada (in dem ganzen Canada), for the tiny-flowered plant with the leaves of the primary axes usually in 6's is superabundant in the Province of Quebec (Canada of Kalm); the stiffer plant with larger leaves in 4's and with large flowers is very local in Quebec, found only in the southwest corner of the Province. In the Gray Herbarium there are 10 sheets of true *G. tinctorium* (*G. Claytoni*) from the portion of Canada known to Kalm; but the two sheets of *G. obtusum* from the Province are both from the vicinity of Montreal.

N. B. The above and other similar cases emphasize the absolute necessity of getting back to the actual types when possible.

Galium triflorum Michx., var. **asprelliforme**, var. nov. (tab. 404, fig. 1), inflorescentia paniculata laxe ovoidea vel ellipsoidea foliorum verticellis superioribus valde reductis, ramis floriferis elongatis paniculato-ramosis plerumque 3–8-nodatis foliis 3–10 mm. longis.—Southern and western New England and New York to northern Florida and Tennessee. Type: border of wet woods near Great

Bridge, Norfolk Co., Virginia, August 4 and 5, 1934, *Fernald & Long*, no. 4205 (in Gray Herb.).

Typical *Galium triflorum* Michx. "pedunculis lateralibus et terminalibus verticillato longioribus, trifloris," originally from "umbrosis Canadae sylvis," occurs in southern Greenland and generally from Newfoundland to southern Alaska, southward into the wooded areas of the northern United States, thence to the uplands of Virginia and sparingly Tennessee, northern Louisiana, Texas and Mexico; it is also in northern and mountainous areas of Eurasia in quite typical form (FIG. 2), with the upper leaves but slightly reduced and the peduncles short and terminally 3-flowered or 3-forked. In southern and western New England and in southern and central New York var. *asprelliforme* is occasionally found, especially in warm areas, and southward it largely takes the place of the typical northern plant. All the material in the Gray Herbarium from Florida, the Carolinas and the coastal plain of Virginia belongs to var. *asprelliforme;* and most of that from Tennessee and Kentucky is either the variety or strongly transitional to it. The name is selected because, in the herbarium, the variety has been repeatedly placed under *G. asprellum* Michx.

G. UNIFLORUM Michx. Occasional: rich deciduous woods, east of Little Creek, Princess Anne Co., no. 4207; Great Neck, *F. G. & L.*, no. 4702; Sigma, *F. G. & L.*, no. 4703.

The first from north of South Carolina.

VIBURNUM SCABRELLUM (T. & G.) Chapm. Border of oak woods, north of Seatack, no. 4212.

MELOTHRIA PENDULA L. Wet sandy woods, northern end of Knott's Island, Princess Anne Co., no. 4213; and seen, occasionally, at other places.

LOBELIA NUTTALLII R. & S. Local: damp sandy and peaty depressions back of the dunes, Rifle Range, no. 4214.

VERNONIA GLAUCA (L.) Willd. Rich deciduous woods, east of Little Creek, no. 4215; and seen elsewhere in northern Princess Anne Co.

A species of the rich interior, apparently isolated and very unusual on the coastal plain.

EUPATORIUM CUNEIFOLIUM Willd. Wet, peaty clearings in woods of *Pinus serotina*, south of Grassfield, Norfolk Co., no. 4223.

Apparently an extension north from South Carolina; var. *semiserratum* (DC.) Fern. & Grisc. is frequent or common.

MIKANIA SCANDENS (L.) Willd., var. PUBESCENS (Muhl.) T. & G. Inundated swale back of the dunes, south of False Cape, Princess

Anne Co., no. 4229; seen in abundance on the brackish to salt marshes along the causeway leading from Munden to Knott's Island.

In Princess Anne Co., *Mikania scandens* of fresh marshes and thickets had membranaceous and prolonged leaves and lilac flowers, like the plant extending into New England. Var. *pubescens* had milk-white flowers and seemed to be confined to brackish or saline habitats; its leaves, in the only collection we made, are like those of the essentially southern variety in being fleshy and scabrous, the pubescence not always abundant. The leaves of the variety are broader or more rounded-ovate than in most northern material. Var. *pubescens* is represented in the Gray Herbarium northward to Burlington Co., New Jersey.

Solidago puberula Nutt., var. pulverulenta (Nutt.) Chapm. (*S. pulverulenta* Nutt.). Apparently local: border of swamp, Pungo Causeway (mixed with typical S. puberula), *F. & G.*, no. 2944 (in part).

Some of the material quite unlike the usually more northern or inland *Solidago puberula* in having the upper leaves abruptly reduced in size, oblong and blunt. First from north of the Carolinas.

S. erecta Pursh. Common in dry soil: Cedar Hill, *F. & G.*, no. 2939; Cape Henry, *F. & G.*, no. 2940.

S. sempervirens L., var. **mexicana** (L.), comb. nov. *S. mexicana* L. Sp. Pl. ii. 879 (1753). Brackish shores, common: Kempsville, *F. & G.*, no. 2941.

Typical *Solidago sempervirens* abounds from the Gulf of St. Lawrence and the lower River St. Lawrence to southern New York and New Jersey, but south of New Jersey it occurs only locally to Virginia. Its fleshy leaves are quite smooth, without ciliolate margins, the lower leaves oblanceolate to spatulate-oblong and 1.2–7 cm. broad, its cauline leaves oblanceolate to lanceolate. The branches of its panicle are usually quite glabrous and the hemispherical heads are very large, with involucres 4–7 mm. high, while its flowers are large for the genus: pappus 3.5–5.5 mm. long; disk-corollas 4–5.5 mm. long; mature achenes 2.2–3.5 mm. long. In subtropical America, extending north on the Atlantic coast to southern New York and locally to southeastern Massachusetts, *S. mexicana* is at once distinguished by its narrower leaves and smaller heads. The basal leaves are linear- to oblong-lanceolate, rarely 3 cm. broad; the cauline linear-lanceolate and often quite acute, frequently ciliolate. The branches of the panicle are often hirtellous and the heads are mostly smaller than in the better developed *S. sempervirens*. I am, however, unable to separate the two as species.

As geographic varieties they are pronounced and in the more fleshy and broader leaves and quite glabrous foliage and branches the northern *S. sempervirens*, var. **typica** (*S. sempervirens* L. Sp. Pl. ii. 878 (1753)) reflects its concentration on the outer saline coast. Var. *mexicana*, with narrower and less fleshy leaves inclined to be scabrous-ciliolate and with hirtellous branches, shows a response to less saline conditions. Its habitats (at least northward) are inclined to be more brackish or inland than strongly saline or on the outermost coast, as indicated by the labels which give sufficient data: brackish marshes, Princess Anne Co., Virginia; Norfolk, Virginia; Queen's Creek, north of Williamsburg, Virginia; Curtis Bay, Anne Arundel Co., Maryland; along Gunpowder River, Maryland; sandy river-shore, Newcastle, Delaware; bank of Hudson R., Fishkill Landing, New York; shore of Lagoon Pond, Tisbury, Massachusetts; dry field at 100 feet elevation, north of Wakebee Pond, Mashpee, Massachusetts; open hillside, two miles from shore, north of Centreville, Massachusetts.

Much of the southern material of var. *mexicana* has been misidentified as *S. petiolata* Mill. (*S. stricta* Ait.; *S. angustifolia* Ell.). *S. petiolata*, however, has a stoloniferous base, very reduced upper cauline leaves and quite glabrous inflorescences.

S. PINETORUM Small. Occasional in dry soil: Barney's Corner, Princess Anne Co., no. 4234. Represented in the Gray Herbarium from Henrico Co. (West Hampton, *Randolph & Merriman*, no. 271) and from Pittsylvania Co. (Fall Creek, *Heller*, no. 1112), both distributed as *S. juncea* Ait.

Solidago pinetorum replaces *S. juncea* on the southeastern coastal plain, extending into the piedmont. It is quickly distinguished by its "triple-nerved" leaves, the basal only 5–17 mm. broad, its smaller heads and its glabrous or glabrate achenes. It was, apparently, included by Nuttall in his complex *S. missouriensis*, on account of the triple-nerved leaves: "Hab. Missouri, Arkansas, the Rocky Mountains, and near Chapel-Hill, North Carolina."—Nutt. Trans. Am. Phil. Soc. v. 327 (1837). The western and inland *S. missouriensis*, however, has abundant slender stolons, none of the material of *S. pinetorum* showing any tendency to produce them. *S. pinetorum* was thought by Kearney in 1901 to be an undescribed species; but, unfortunately, the species cannot now take his name: "**Solidago** sp. nov.? . . . Edenton, N. C., July 30 (Nos. 1897, 1900). Leaves distinctly triple-nerved; species intermediate between *S. juncea* Ait. and *S. missouriensis* Nutt."

S. TORTIFOLIA Ell. Local: depressions in clay fields, Rosemont, no. 4233.

Photo. E. C. Ogden.

GALIUM TRIFLORUM, var. ASPRELLIFORME: FIG. 1, flowering plant (TYPE), × 5/12.
G. TRIFLORUM: flowering plant, × 5/12.

Photo. E. C. Ogden.

GNAPHALIUM CALVICEPS: FIG. 1, flowering plant (TYPE), × 1; FIG. 2, 1st year's rosette, × 1; FIG. 3, involucres, × 5; FIG. 4, tip of cauline leaf, × 10.

G. FALCATUM: FIG. 5, inflorescence, × 1; FIG. 6, glomerule of involucres, × 5; FIG. 7, tip of cauline leaf, × 10.

G. PEDUNCULOSUM: FIG. 8, inflorescence of TYPE, × 1; FIG. 9, tip of cauline leaf, × 10.

Aster undulatus L. Infrequent: dry oak woods, Cape Henry, *F. & G.*, no. 2917.

Erigeron pusillus Nutt. Abundant in sandy soil: Cape Henry, *F. & G.*, no. 2915; False Cape, *F. G. & L.*, no. 4708.

Pluchea petiolata Cass. Brackish marsh by Thurston Brook, Smith's Corner, Princess Anne Co., nos. 4248, 4249.

Antennaria Parlinii Fern. Locally in borders of rich woods: Little Neck, no. 4240; Great Bridge, *F. & G.*, no. 4514.

A. fallax Greene. Local, at borders of rich woods: Little Neck, no. 4238.

A. solitaria Rydb. Local, with the two preceding on Little Neck, no. 4239.

Chiefly a species of the interior. One of Clayton's specimens (his no. 287) of *A. solitaria*, from somewhere in Virginia, was included by Linnaeus under his *Gnaphalium plantaginifolium*.

Gnaphalium (§ Gamochaeta) **calvescens,** sp. nov. (tab. 405, figs. 1–4), bienne; foliis rosulatis juvenilibus spathulato-oblanceolatis obtusis apice apiculatis brevissime pannoso-tomentulosis 1.3–4 cm. longis 0.6–1.2 cm. latis; caulibus subsimplicibus vel plerumque ramosis 1–2.5 dm. altis, ramibus valde adscendentibus gracilibus sericeis; foliis caulinis lineari-oblanceolatis falcatis apice acutis vel attenuatis subulato-mucronatis sericeo-tomentulosis imis 2.5–4 cm. longis 3–5 mm. latis, superioribus valde reductis glomerulis brevioribus vel eas paulo superantibus lineari attenuatis; capitulis stramineis glomerulatis glomerulis distantibus spicam interruptam gracilem 0.5–1 cm. crassam formantibus; involucris 3–4 mm. altis glabris vel subglabris basi vix lanatis; bracteis ca. 10, lineari-oblongis exterioribus subacutis interioribus obtusis 0.5 mm. latis; floribus fertilibus 5–6, imperfectis 12–15 ca. 4 mm. longis; achaeniis oblongis 0.5 mm. longis; pappi setis 12–15 longe barbellulatis 2–2.5 mm. longis; receptaculis denudatis planis papillatis.—Virginia: sandy pinelands, The Desert, Cape Henry, July 28 and 29, 1934, *Fernald & Long*, no. 4245 (type in Gray Herb.); dry open clay lands, Virginia Beach, July 27, 1934, *Fernald & Long*, no. 4244, June 21, 1935, *Fernald, Griscom & Long*, no. 4710.

It is with great hesitation that I propose another species of *Gnaphalium* § *Gamochaeta*, especially since the revision of the group in the Gray Herbarium and the publication by Dr. I. M. Johnston of six new species[1] of the section from Mexico. *G. calviceps*, however, stands apart from the other members of the group described from North America in so many characters that I am unable to identify it with any of them; nor can I match it even approximately with South American and Old World plants. When a detailed study of the entire group, with full knowledge of the types, can be made it may find a

[1] Johnston, Contrib. Gray Herb. lxviii. 98–101 (1923).

place under an already described species. The nearest allies, as I understand them, of *G. calviceps* are *G. falcatum* Lam., originally from Uruguay but extending north on coastal sands to South Carolina, and *G. pedunculosum* Johnston, of south-central Mexico.

Gnaphalium falcatum (FIG. 5), however, is loosely tomentose; the leaves bluntly mucronate (FIG. 7); the inflorescence thicker and more crowded, with prolonged leafy bracts with the larger involucres densely enmeshed in tomentum (FIG. 6), with ovate outer involucral bracts; and with much longer pappus. Contrasted with *G. falcatum*, *G. calviceps* is closely sericeous-pannose or -tomentulose; its leaves (FIG. 4) taper to more subulate tips; the open inflorescence has much smaller bracts, and its small involucres (FIG. 3) are essentially glabrous except sometimes at base, and the outer bracts are much narrower.

Gnaphalium pedunculosum (FIG. 8) has less mucronate leaf-tips (FIG. 9); pedunculate, densely leafy-bracted subspherical glomerules, involucres larger (4–5 mm. high) with about 20 bracts, the outer bracts ovate; the flowers 50 or more, 2.5 mm. long; and the pappus-bristles only 6. It is quite unlike *G. calviceps* in all details.

In the region of Cape Henry *Gnaphalium calviceps* occurred with the wholly different *G. purpureum* L. Many plants were over-ripe but others were in fresh anthesis at the end of July (obviously extending into early August). *G. falcatum*, its nearest relative, perhaps, is represented in the Gray Herbarium by material from the sands of South Carolina, thence to Florida and Mississippi. All of it (some fully ripe) from South Carolina and Georgia was mature in April or early May, while that from Florida was collected in February and March. During our trip two strange plants particularly attracted us as very distinct. One was the *Hypoxis* which I have called *H. Longii;* the other the little *Gnaphalium calviceps*, strongly contrasted with *G. purpureum*, with which it was associated. I can appropriately name the first for one of its discoverers; the name of the second sufficiently suggests the other collector.

POLYMNIA UVEDALIA L., var. FLORIDANA Blake, RHODORA, xix. 48 (1917). Occasional: dry clay of open woods and thickets, north of Blackwater River, Princess Anne Co., no. 4253.

Our material is a good match for the type, from Brevard Co., Florida. Blake restricted the variety to Florida, but it has a coastal plain dispersal northward to Delaware and westward to Alabama, the coastal plain specimens in the Gray Herbarium from these states and from Virginia (Williamsburg, *Grimes*, no. 4219), South Carolina

and Georgia all belonging to it; while the plant of the Piedmont and Appalachian region is Blake's var. *genuina*, with very glandular pedicels. Var. *floridana* lacks the abundant glands and has the pedicels pilose-hispid. The material, now more abundant than when he studied it, has the lobes and teeth of the leaves sharper than in var. *genuina*.

Silphium trifoliatum L. Border of dry, mixed woods, Little Neck, Princess Anne Co., no. 4254, typical form with leaves in 3's; swampy woods, London Bridge, no. 4255 (leaves opposite or alternate). Collected also by Kearney.

A typical plant of the interior, here on the outer coastal plain.

Borrichia frutescens (L.) DC. Upper border of salt marsh, Wachapreague, Accomac Co., no. 4251.

Bidens vulgata Greene. Apparently infrequent: ditch near Back Bay, *F. & G.*, no. 2929.

Helenium tenuifolium Nutt. Clay field south of Seatack, no. 4256.

Cacalia atriplicifolia L. Frequent in dry woods and thickets: between Creed's and Back Bay P. O., no. 4258; Little Neck, no. 4259.

Hieracium venosum L., var. Blombergii Zahn. Frequent in sandy pinelands: Cape Henry, no. 4261.

EXPLANATION OF PLATES 384–405

Plate 384. Asplenium platyneuron (L.) Oakes: fig. 3, mature pinnae, showing confluent sori, × 1, from Little Creek, Virginia, *Fernald & Long*, no. 3602.

A. platyneuron, var. euroaustrinum, n. var.: fig. 1, plant, × ⅖, from Munden, Virginia, *Fernald & Long*, no. 3603 (type); fig. 2, mature pinna, showing remote sori, × 1, from the type.

Plate 385. Sagittaria Weatherbiana, n. sp.: fig. 1, flowering plant and a second inflorescence, × ½, from north of Land of Promise, Virginia, *Fernald & Griscom*, no. 4297 (type); fig. 2, dilated filaments and long anthers, × 10, from the type; figs. 3–6, mature achenes, × 10, from type-station, *Fernald, Griscom & Long*, no. 4536.

Plate 386. Sagittaria Weatherbiana, n. sp.: fig. 1, phyllodia, × 5/12, from Longwood Island, Waccamaw River, South Carolina, *Weatherby & Griscom*, no. 16,395.

S. graminea Michx.: fig. 2, anthers, × 2, from Little Meteghan Lake, Nova Scotia, *Fernald & Long*, no. 23,174; figs. 3, 4 and 5, achenes, × 10, from Dune Park, Porter Co., Indiana, July 29, —, *D. C. Peattie*.

S. ambigua J. G. Sm.: fig. 6, stamens, × 10, from Joplin, Missouri, *E. J. Palmer*, no. 2130A; fig. 7, achene, × 10, from Alba, Missouri, *E. J. Palmer*, no. 3061.

S. cycloptera (J. G. Sm.) Mohr.: fig. 8, stamens, × 10, from Myers, Florida, *Hitchcock*, no. 371; figs. 9 and 10, achenes, × 10, from Fort Myers, Florida, *J. P. Standley*, no. 121.

S. lancifolia L.: fig. 11, stamens, × 10, from Eustis, Florida, *Nash*, no. 124; figs. 12 and 13, achenes from Miragoane, Haiti, *Eyerdam*, no. 422.

S. falcata Pursh: fig. 14, stamens, × 10, from Florida, *Biltmore Herb.*, no. 3300[a]; fig. 15, achene, × 10, from Munden, Virginia, *Fernald & Long*, no. 3625.

PLATE 387. ELEOCHARIS AMBIGENS, n. sp.: FIG. 1, plant, × ⅔, from Dam Neck, Virginia, *Fernald & Long*, no. 3765 (TYPE); FIGS. 2 and 3, spikelets, × 4, from the TYPE; FIGS. 4 and 5, summit of sheath, × 10, from TYPE; FIG. 6, achene, × 10, from TYPE; FIG. 7, achene, × 25, from TYPE; FIG. 8, surface of achene, × 50, from TYPE.

E. UNIGLUMIS (Link) Schultes: FIG. 9, spikelet, × 4, from Anholt, Denmark, July 25, 1897, *Ove W. Paulsen;* FIG. 10, summit of sheath, × 10, from same; FIG. 11, achene, × 10, from same.

E. HALOPHILA Fernald & Brackett: FIG. 12, spikelet, × 4, from Bonaventure River, Quebec, August 2–4, 1904, *Collins, Fernald & Pease* (TYPE); FIG. 13, summit of sheath, × 10, from TYPE; FIG. 14, achene, × 10, from TYPE.

PLATE 388. Forms of FIMBRISTYLIS PUBERULA (Michx.) Vahl., × 1; all from flats back of the dunes, Rifle Range, south of Rudy Inlet, Virginia, *Fernald & Long:* FIG. 4, F. PUBERULA (typical), no. 3746; FIGS. 1 and 2, forma EUCYCLA, n. f., no. 3750 (TYPE); FIG. 3, forma PYCNOSTACHYA, n. f., no. 3752 (TYPE).

PLATE 389. FIMBRISTYLIS BALDWINIANA (Schultes) Torr.: FIG. 1, inflorescence, × 1, from Sand Bridge, Virginia, *Fernald & Long*, no. 3755; FIG. 2, spikelet, × 5, of no. 3755; FIGS. 3 and 4, achenes, × 10, from no. 3757; FIG. 5, inflorescence, × 1, from Northwest, Virginia, *Heller*, no. 760; FIG. 6, spikelet, × 5, from no. 760; FIGS. 7 and 8, achenes, × 10, from no. 760; FIG. 9, inflorescence, × 1, from Williamson, Pennsylvania, August 19, 1906, *Pennell* (*F. Darlingtoniana* Pennell); FIG. 10, spikelet, × 5, from Williamson (*F. Darlingtoniana*); FIGS. 11 and 12, achenes, × 10, from Williamson (*F. Darlingtoniana*); FIG. 13, inflorescence, × 1, from Rosemont, Virginia, *Fernald & Long*, no. 3756; FIG. 14, inflorescence, × 1, from Goshenville, Chester Co., Pennsylvania, *Bartram*, no. 1213 (*F. Darlingtoniana*); FIG. 15, spikelet, × 5, from no. 1213 (*F. Darlingtoniana*); FIGS. 16 and 17, achenes, × 10, from no. 1213; FIG. 18, inflorescence, × 1, from Florida, *Torrey*, N. Am. Cyp.; FIG. 19, spikelets, × 5, from Florida, *Torrey;* FIGS. 20 and 21, achenes, × 10, from same; FIG. 22, inflorescence, × 1, from near Athens, Georgia, *Harper*, no. 68; FIG. 23, spikelet, × 5, from no. 68; FIGS. 24 and 25, achenes, × 10, from no. 68; FIG. 26, inflorescence, × 1, from Newcastle Co., Delaware, September, 1872, *Commons* (*F. Darlingtoniana*); FIGS. 27 and 28, achenes, × 10, from same; FIGS. 29 and 30, achenes, × 10, from West Chester, Pennsylvania, *Darlington* (*F. Darlingtoniana*); FIGS. 31 and 32, achenes, × 10, from Northwest, Virginia, *Heller*, no. 1249.

PLATE 390. RYNCHOSPORA GRACILENTA Gray: FIG. 1, plant, showing all leaves involute-capillary, × ⅔, from Bamber, New Jersey, August 25, 1909, *Bayard Long;* FIG. 2, inflorescence, × 2, from same; FIG. 3, achene, × 10, from Shark River, New Jersey, September 20, 1861, *Wm. Boott.*

R. GRACILENTA, var. DIVERSIFOLIA, n. var.: FIG. 4, plant, showing flat cauline leaves, × ⅔, from Rifle Range, south of Rudy Inlet, Virginia, *Fernald & Long*, no. 3796 (TYPE); FIG. 5, inflorescence, × 2, from TYPE; FIGS. 6 and 7, achenes, × 10, from TYPE.

PLATE 391. RYNCHOSPORA AXILLARIS (Lam.) Britton (SCHOENUS AXILLARIS Lam.): FIG. 1, TYPE of *S. axillaris*, × ¾, from photograph sent from Muséum National d'Histoire Naturelle, Paris, by PROFESSOR HUMBERT.

R. CEPHALANTHA Gray: FIG. 2, inflorescence, × 1, from Pine Barrens of New Jersey, *Torrey* (TYPE); FIG. 3, achene, × 10, from TYPE.

R. MICROCEPHALA Britton: FIG. 4, inflorescence (folded back), × 1, from south of Grassfield, Norfolk Co., Virginia, *Fernald & Long*, no. 3785; FIG. 5, achene, × 10, from Salisbury, Maryland, September 28, 1863, *Commons.*

PLATE 392. UVULARIA PUBERULA Michx.: FIG. 1, exceptionally small fruit, × 1.8, from Cove Road, Craig Co., Virginia or Monroe or Allegheny Co., West Virginia, *Steele & Steele*, no. 268; FIG. 4, flower, showing long style, × 1.8, from White Sulphur Springs, West Virginia, May, 1914, *F. W. Hunnewell;* FIG. 5, flower, showing long anthers, × 1.8, from same collection as FIG. 4; FIG. 7, lower surface of leaf, by reflected light, showing elevated reticulation (with shadows), × 5, from Henderson Co., North Carolina, *Wiegand &*

Manning, no. 856; FIG. 8, reticulation of same leaf (cf. FIG. 6), × 5, by transmitted light.

U. PUBERULA, var. NITIDA (Britton) Fern.: FIG. 2, flower, showing long style, × 1.8, from South Lakewood, New Jersey, *Mackenzie*, no. 4556; FIG. 3, flower, showing long anthers, × 1.8, from Tom's River, New Jersey, May 30, 1907, *Eggleston;* FIG. 6, lower surface of leaf, by reflected light, showing reticulation not elevated (no shadows), from Tom's River, New Jersey, May 31, 1887, *N. L. Britton* (one of original specimens)—cf. FIG. 8.

PLATE 393. HYPOXIS LONGII, n. sp., all figs. from Rifle Range, Virginia, *Fernald & Long*, no. 3862 (TYPE): FIG. 1, fruiting plant, × 1; FIG. 2, flower, × 5; FIG. 3, flower mechanically spread open, × 10; FIG. 4, summit of fruit, × 10; FIG. 5, dehisced fruit, with seeds, × 10; FIG. 6, valves of dehisced capsule, × 10; FIGS. 7 and 8, seeds, × 12.

PLATE 394. CARPINUS CAROLINIANA Walt.: FIG. 1, tip of fruiting branch, × 1, from Rock Bluff, Liberty Co., Florida, *Wiegand & Manning*, no. 972; FIG. 2, bract and fruit, × 2, from no. 972; FIG. 3, bract and fruit, × 2, from Vienna, Johnson Co., Illinois, *Gleason*, no. 2289; FIG. 4, bract and fruit, × 2, from southwest of Five Forks, James City Co., Virginia, *Randolph & Randolph*, no. 411; FIG. 5, bract and fruit, × 5, from Mars Bluff, Florence Co., South Carolina, *Wiegand & Manning*, no. 970; FIG. 6, leaf-margin, × 5, from Ocean Springs, Mississippi, *Tracy*, no. 6892; FIG. 7, leaf-margin, × 5, from Tallahassee, Florida, *Nash*, no. 2340; FIG. 8, leaf-margin, × 5, from near Blackwater River, Virginia, *Fernald & Long*, no. 3894; FIG. 9, leaf-margin, × 5, from Elizabeth City, North Carolina, *Wiegand & Manning*, no. 969; FIG. 10, leaf-margin, × 5, from Gibson, Glascock Co., Georgia, *Harper*, no. 1322.

PLATE 395. CARPINUS CAROLINIANA, var. VIRGINIANA (Marsh.) Fern.: FIG. 1, tip of fruiting branch, × 1, from Franklin, Connecticut, September 16, 1906, *R. W. Woodward;* FIG. 2, bract and fruit, × 2, from Sidney, Maine, *Fernald & Long*, no. 13,443; FIG. 3, bract (transitional) and fruit, × 2, from Gossan, Carroll Co., Virginia, July 12, 1892, *Small;* FIG. 4, bract and fruit, × 2, from Redding, Connecticut, *Weatherby*, no. D2717; FIG. 5, leaf-margin, × 5, from Easton, Pennsylvania, July 15, 1897, *Porter;* FIG. 6, leaf-margin, × 5, from Fayette, Iowa, July, 1894, *Fink;* FIG. 7, leaf-margin, × 5, from Sidney, Maine, *Fernald & Long*, no. 13,443.

PLATE 396. LINUM: plants, × ¾; leaves, × 5; details of leaf-venation, × 10; capsules, × 5; ripe carpels, × 8.

LINUM MEDIUM (Planch.) Trel.: FIG. 1, small fruiting plant, from Stokes Bay, Bruce Co., Ontario, *Krotkov*, no. 7570; FIG. 2, capsule, from no. 7570; FIG. 3, leaf, from no. 7570; FIG. 4, portion of leaf (opaque), illuminated by transmitted light, from no. 7570; FIG. 5, ripe carpels, from no. 7570.

LINUM MEDIUM, var. TEXANUM (Planch.) Fern.: FIG. 6, small plant, from Virginia Beach, Virginia, *Fernald & Long*, no. 3989; FIG. 7, capsule, from no. 3989; FIG. 8, leaf, from no. 3989; FIG. 9, portion of leaf, by transmitted light, from no. 3989; FIG. 10, ripe carpels, from no. 3989.

L. FLORIDANUM (Planch.) Trel.: FIG. 11, leaf, from Duval Co., Florida, *Curtiss*, no. 412; FIG. 12, center of leaf, by transmitted light, from no. 412; FIG. 13, fruit, from Sumter Co., Georgia, *Harper*, no. 1026; FIG. 14, ripe carpels, from Brevard Co., Florida, *Fredholm*, no. 6157.

L. INTERCURSUM Bickn.: FIG. 15, leaf, from West Tisbury, Martha's Vineyard, Massachusetts, *F. C. Seymour*, no. 1251; FIG. 16, center of leaf, by transmitted light, from no. 1251; FIGS. 17 and 18, capsules, from Little Neck, Virginia, *Fernald & Long*, no. 3992; FIG. 19, ripe carpels, from Nantucket, Massachusetts, August 29, 1904, *Bicknell*.

PLATE 397. NYSSA SYLVATICA Marsh, var. TYPICA: FIG. 1, fruiting branch, × 1, showing characteristic leaves and long fruiting peduncles, from Dam Neck, Virginia, *Fernald & Long*, no. 4099; FIG. 2, lower surface of leaf, × 10, from no. 4099; FIG. 3, staminate inflorescence, × 3, showing the short pedicels, from Brookline, Massachusetts, *Faxon*.

PLATE 398. NYSSA SYLVATICA Marsh., var. BIFLORA (Walt.) Sarg.: FIG. 1, fruiting branch, × 1, showing the short peduncles, from Cape Henry, Virginia,

Fernald & Long, no. 4096; FIG. 2, staminate inflorescence, × 3, from Greensboro, Alabama, 1887, *S. Watson*.

PLATE 399. NYSSA SYLVATICA Marsh., var. DILATATA, n. var.: FIG. 1, portion of fruiting branch, × 1, from the TYPE, Hartwell, Hart Co., Georgia, *Wiegand & Manning*, no. 2339; FIG. 2, staminate inflorescence, × 3, from near Sebring, Highland Co., Florida, *F. W. Hunnewell*, no. 9021.

PLATE 400. NYSSA SYLVATICA Marsh., var. CAROLINIANA (Poir.) Fern.: FIG. 1, fruiting branch, × 1, from Hanging Rock, Hampshire Co., West Virginia, *F. W. Hunnewell*, no. 10,705; FIG. 2, lower surface of leaf, × 10, from no. 10,705; FIG. 3, staminate inflorescence, × 3, from Biltmore, North Carolina, *Bilt. Herb.*, no. 662[b].

PLATE 401. BACOPA MONNIERIA (L.) Wettst., var. CUNEIFOLIA (Michx.) Fern.: FIGS. 1 and 2, summits of erect plants, × 1, from False Cape, Virginia, *Fernald & Long*, no. 4185; FIG. 3, flowers, × 3, showing broad and blunt large sepals, from no. 4185; FIG. 4, flower, × 3, showing broad and blunt large sepals and corolla-lobes, from Dam Neck, Virginia, *Fernald & Long*, no. 5183; FIG. 7, terminal leaves, × 3, showing dentation, from Montgomery, Georgia, *Harper*, no. 1826.

B. MONNIERIA: FIG. 5, plant, × 1, from vicinity of St. Michel de l'Atalaye, Dépt. du Nord, Haiti, *Leonard*, no. 7041; FIG. 6, fruit, × 3, showing narrow and acutish calyx-lobes, from Miragoane, Haiti, *Eyerdam*, no. 563.

PLATE 402. PHRYMA LEPTOSTACHYA L., var. CONFERTIFOLIA, n. var.: FIG. 1, plant, × 1, from Little Neck, Virginia, *Fernald & Long*, no. 4197 (TYPE).

P. LEPTOSTACHYA: FIG. 2, leaf, × 1, from Fayette, Iowa, July, 1894, *Fink*.

PLATE 403. GALIUM TINCTORIUM L.: FIG. 1, TYPE in Linnean Herbarium, × 1, from photograph supplied by Mr. S. SAVAGE; FIG. 2, flowering branch, × 1, of *G. Claytoni* Michx., from Conquest, New York, *Wiegand*, no. 7172.

GALIUM OBTUSUM Bigelow: FIG. 3, flowering branch, × 1, of *G. tinctorium* Wiegand, not L., from Conquest, New York, *Metcalf & Wiegand*, no. 7179.

PLATE 404. GALIUM TRIFLORUM Michx.: FIG. 2, characteristic small plant, × 5/12, from Brig Bay, Newfoundland, *Fernald, Long & Dunbar*, no. 27,096.

G. TRIFLORUM, var. ASPRELLIFORME, n. var.: FIG. 1, flowering plant, × 5/12, from near Great Bridge, Virginia, *Fernald & Long*, no. 4205 (TYPE).

PLATE 405. GNAPHALIUM CALVICEPS, n. sp.: FIG. 1, flowering plant, × 1, from Cape Henry, Virginia, *Fernald & Long*, no. 4245 (TYPE); FIG. 2, 1st year's rosette, × 1, from the TYPE; FIG. 3, involucres, × 5, from the TYPE; FIG. 4, tip of cauline leaf, × 10, from the TYPE.

G. FALCATUM Lam.: FIG. 5, inflorescence, × 1, from the type-region, Montevideo, Uruguay, *Herter*, no. 200, in part; FIG. 6, glomerule, × 5, from Dept. de Andalgalá, Prov. de Catamarca, Repub. Argentina, *Jorgensen*, no. 1101; FIG. 7, tip of cauline leaf, × 10, from Uruguay, *Herter*, no. 200.

G. PEDUNCULOSUM Johnston: FIG. 8, inflorescence, × 1, from Otinapa, Durango, Mexico, *Edw. Palmer*, no. 411 (TYPE); FIG. 9, tip of cauline leaf, from the TYPE.

TRADESCANTIA WRIGHTII IN NEW MEXICO.—Since its description in 1904 *Tradescantia Wrightii* Rose & Bush[1] has been considered a strictly endemic species of the Guadalupe Mountains of Texas; positively known, as a matter of fact, from a single canyon in Culberson County. While a recent revision[2] of the species of *Tradescantia* was in press Hubricht collected the same species in abundance in Lincoln County, New Mexico, about two hundred miles north of the region of its occurrence as previously known in southwestern Texas.

[1] Trans. Acad. Sci. St. Louis **14**: 188. 1904.

[2] E. Anderson & Woodson, Contrib. Arnold Arb. IX. 1935.

The plants were found at an altitude of about 6700 feet elevation on a limestone glade with a gentle southwestern slope, in open places among junipers, about 2 miles southwest of Corona. Living plants are now cultivated at the Missouri Botanical Garden, and exsiccatae are incorporated in the herbarium.

The plants correspond in every way to those of *Wright 701*, the type specimen in the United States National Herbarium. It is very important to note that the few leaves of the living plants are very fleshy; almost terete with a slight ventral groove over the midrib, and with a very slight glaucous cast, an important criterion to aid in the separation of living specimens from those of the closely neighboring *T. occidentalis* (Britton) Smyth var. *typica* and *T. pinetorum* Greene.—R. E. Woodson, Jr. and Leslie Hubricht, Missouri Botanical Garden, Saint Louis, Mo.

Plants apparently new to Mount Katahdin, Maine.—Picea glauca (Moench.) Voss. A mature plant bearing new cones, on the southern slope of the North Mountain was found by the writer in 1926. This old "tree" was closely appressed to the ground, like the procumbent cedar.

Glyceria melicaria (Michx.) F. T. Hubb. At a point where the road to Basin Ponds approaches Roaring Brook just below the Basin Ponds, I collected this grass from a dense mass at the edge of the brook, in 1923. Altitude about 2300 feet.

Carex oligosperma Michx. Collected at Pomola Pond in 1923 by Mrs. J. H. Blake. Altitude about 2300 feet.

Carex Michauxiana Boeckl. I found a thriving colony of this sedge at the foot of Pomola, where two eastern forks of Avalanch Brook meet and form a muddy puddle. Altitude about 2400 feet. This point is near the foot the eastern slide.

Osmorhiza obtusa (Coulter & Rose), Fernald. I have found this in good condition in South Basin, between Basin Ponds and Saddle Slide, at several points. L. H. Harvey (1903[1]), mentions "*Osmorhiza* sp.?" as seen in Northwest Basin.—Arthur H. Norton, Museum of Natural History, Portland, Maine.

Volume 37, no. 443, including pages 373–416 and plates 383–393, was issued 9 November, 1935.

[1] 1903, L. H. Harvey, Rhodora 5: 49.

ERRATA

Cover no. 439, line 6; *for* forms *read* forma.
Cover no. 443, line 9; *for* **No. 442** *read* **No. 443.**
Page 39, line 14; for *Floorkeana* read *Floerkeana.*
Page 61, line 7; *for* Pl. 0 *read* Pl. 326.
Page 110, line 2; *for* fig. e *read* fig. j.
Page 117, line 18; *for* turgidus *read* turgida.
Page 129, line 10; *for* 232–251 *read* 332–351.
Page 130, line 38; for *Oxydendron* read *Oxydendrum.*
Page 151, line 29; for *stenopelis* read *stenolepis.*
Page 161, line 17; *for* latofolium *read* latifolium.
Page 171, line 4; *for* Columbia *read* Colombia.
Page 182, line 5; *for* Androscaggin *read* Androscoggin.
Page 218, line 13; for *Adencaulon* read *Adenocaulon.*
Page 273, line 5; *for* better *read* sometimes.
Page 284, line 11; for *nutkanas* read *nutkanus.*
Page 291, line 37; *for* which has *read* which, it would seem, has.
Page 291, line 38; omit *P. pensylvanica.*
Page 306, line 17; for *Euphorbiacea* read *Euphorbiaceae.*
Page 311, line 31; for *polypodiodes* read *polypodioides.*
Page 315, line 9; *for* nephenthoides *read* nepenthoides.
Page 410, line 15; *for* Breat *read* Great.
Page 414, line 22; *for* The only *read* Four of the.
Page 414, line 22; *for* locality *read* localities.
Page 414, line 23; *for* is *read* are.
Page 414, line 24; *for* a station *read* stations.
Page 414, line 25; *after* miles *add* or more.
Page 415, line 19; *for* hexaganoptera *read* hexagonoptera.

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